EXPLORING ORGANIZATIONAL CHANGE IN HEALTHCARE:

UNDERSTANDING THE INNOVATION DECISION PROCESS OF ADOPTERS

by
Ezinne Eze- Ajoku

A dissertation submitted to Johns Hopkins University in conformity with the requirements for

the degree of Doctor of Public Health

Baltimore, Maryland
October 2019

Abstract

Over time, researchers have articulated several factors that influence the adoption of an innovation at an organizational level. To remain viable, organizations must continue to adapt to internal and external changes while being innovative to stay ahead of the curve. The healthcare industry is no different. While some innovations have clearly demonstrated benefits in terms of the relative advantage that they provide, uptake of these innovations can be stifled by multiple factors. The purpose of this multi-case study is to explore contextual factors that influence the adoption, implementation and consequences of the Patient Centered Medical Home (PCMH) model transformation efforts across time. Using organizational theory, I explored the organizational decision-making process regarding adoption, the perceptions of providers and staff on the PCMH transformation over time, and the perceived consequences of implementation of the PCMH model across practices. The data source is the Maryland Multi-Payer Patient Centered Medical Home Program evaluation, designed to test the effectiveness of the PCMH model in that state. Semi-structured interviews were conducted in 9 PCMH practices in Maryland. Everett Rogers' Diffusion of Innovation model was used to guide the qualitative thematic analysis. I found that practices were motivated to implement the PCMH model primarily as a result of a desire to improve patient outcomes and participate in the financial incentives available through the MMPP. Generally, staff and providers agreed with the rationale for the model but were hesitant to embrace the implementation of change due to an anticipated increase in workload as a result of implementation. Across most practices, the reaction to the model implementation was mixed (i.e., enthusiastic and supportive or resistant to the proposed changes). Practice leaders employed multiple successful strategies including communication,

training and education on the change to improve adoption within the practice. The results of this research suggest that change implementation is likely to succeed if managers learn through adaptation of use. Practices vary by important characteristics which may influence motivation for change such that policy makers need to match primary care practice motivations to policies for the delivery of high-quality care in the United States.

Advisor:

Jill A. Marsteller PhD, MPP

Readers:

Caitlin Kennedy PhD (Committee Chair)

Laura Morlock PhD

Sydney E. Dy MD MSc

Christina Yuan PhD

Acknowledgements

I would like to give thanks first and foremost to my Lord and Savior Jesus Christ for His mercies and goodness to me throughout my life. He has always ordered my steps and provided me with all the resources I need through the people he continues to place in my life and the wisdom that he blesses me with.

One of the most important blessings I have had through my DrPH came in the form of my advisor Jill Marsteller. I am grateful to Jill for all the time she reached out, listened to me and provided guidance on my research and life in general. I hope I have made you proud and been a good steward of your investment in me.

I was immensely blessed to have a wonderful dissertation committee. This committee made up of Sydney Dy, Laura Morlock, Caitlin Kennedy and Christina Yuan consistently guided me and supported me throughout the process of developing my research and completing it.

There is no way I could have completed this degree without the support of my friends including Chinenye Ogunro, Seyi Ibidapo, Ehi Nosakhare, Hezekiah Shobiye, Bola Bukoye, Olatokunbo Osibogun. I am blessed to call you friends and you have become family. Thank you for listening to me during the highs and lows of completing my doctorate and for making me laugh and bringing so much joy to my life. To my African friends and colleagues who have walked alongside with me here at JHSPH, Dolapo, Kayode, Mani, Jare, Adaeze thank you for being great friends, study partners and for ensuring that I could achieve a sense of work-life balance.

Finally, I could not have come this far with the support of my family. I have been blessed to know the love of both of my parents, been covered by their prayers and I have never been in doubt of their love for me. My parents have sacrificed so much of their time and resources to

allow me to thrive and achieve my dreams. I am grateful to my sister Chidiebere, my greatest cheer leader and friend for always celebrating every victory with me no matter how small or abstract. To my brothers Obinna and Chinedu, thank you for always calling me to check in on me, financially and emotionally. To my extended family of cousins, uncles and aunts, thank you so much. I finally did it!!

Table of Contents

List of Tables

List of Figures

Introduction

1.1 Study objectives

Healthcare practices, like many organizations, continuously undergo restructuring and reengineering for improvement. In the United States, the desire for increased value of service delivery and evidence-based practice fuels continuous policy change in the healthcare industry. These changes have implications for practice among healthcare workers[1]. As a result of high regulation, political interests and the wide reaching economic implications of healthcare, it is not uncommon for a disconnection to occur between policy makers and frontline healthcare workers (who have to interpret changing policies while maintaining the goal of providing excellent patient care) in relation to initiatives to improve care[2]. As a result, regulatory requirements continue to be perceived as a burden for frontline providers[3].

On the other hand, healthcare is a sector with high accountability that thrives on characteristics such as reliability and routinized processes, which give health care practices stability but can also act as barriers to change adoption[4]. Thus, given the need for constant change and improvement, it is useful to understand how health care providers respond to change and the various pathways that practices can take to ensure successful implementation of quality improvement interventions.

Problem Statement: Many healthcare practices that embark on the adoption of innovative change ideas struggle to replicate the results of successful systems[5] because implementation of change ideas is largely driven by the proliferation (and adaptation) of successful processes into

organizational contexts with internal characteristics and cultures that largely differ from organizations in which success has been demonstrated. Hence, despite large investments of millions of dollars in innovative projects for integrated care, coordinated care and improvements in quality of service delivery, with each new project being the "fix" for healthcare, some of these projects have hardly lived up to expectations[6].

1.2 Specific Aims and Research Questions

This study employs a qualitative case study methodology to analyze the adoption of an innovation in healthcare organizations in Maryland. Participants in this study include healthcare managers, providers and staff who are part of practices undergoing transformation to be recognized as a Patient Centered Medical Home (PCMH). For the purpose of this study, a PCMH is defined as "a model of practice in which a team of health professionals, guided by a primary care provider, provides continuous, comprehensive, and coordinated care in a culturally and linguistically sensitive manner to patients throughout their lives"[7].

The study examines the role of context in determining the adoption of change by examining the organizational motivation for change implementation, the response of frontline staff and providers to change and the consequences or outcomes of implementing the PCMH model. It seeks to understand how frontline staff perceptions influence implementation and outcomes across practices implementing the PCMH initiative. The specific aims and research questions are:

AIM 1: To explore the adoption decision-making process of practices in implementing the PCMH model

- ***Research Question 1a***: How is agenda-setting carried out within these practices, i.e. what decision-making process is involved in choosing the PCMH model?
- ***Research Question 1b***: What are the organizational motivations for implementing the PCMH model?

AIM 2: To explore the organizational change implementation process and responses by frontline providers over time

- ***Research Question 2a***: What are the perceptions of the PCMH model among frontline staff and providers over time?
- ***Research Question 2b***: What are the reasons for active or passive adoption of the model among frontline staff?
- ***Research Question 2c***: What strategies are used by leadership to move frontline staff and providers through the decision process to active adoption?

AIM 3: To explore the resulting consequences of implementation of the model across practices

- ***Research Question 3a***: What are the facility effects of transformation over time?
- ***Research Question 3b***: What are the resulting patient effects?

1.3 Policy Implications of this study

The PCMH model advocates for more investment in primary healthcare, which accounts for more than half of physician visits each year in the US[8]. The model continues to spread rapidly

with benefits that are well documented. There are substantial costs that are associated with the implementation of the PCMH model[9] and thus it is crucial to understand how providers and staff can more readily adopt the model to yield the associated benefits while ultimately reducing costs not just for patients but also for practices. By identifying the organizational motivations for implementation, the first aim will provide insight into what advantages of the PCMH model are attractive to practice leaders and what late adopters of the model may desire to achieve, which is especially relevant since there are still practices that have not yet signed up for transformation.

In identifying the response of frontline staff and providers to the model, the second aim will provide insight to support effective translation of policy into practice. In addition, by uncovering provider and staff barriers and facilitators to change implementation, the study will contribute to knowledge on the design of policies that address cost, quality and issues around access to healthcare that extend beyond the PCMH model. While research has been able to identify characteristics of innovation that improve adoption, there has not been enough attention paid to identifying the social and cognitive boundaries within a health organization that underlie the implementation of innovations. The healthcare sector is distinct because it depends on a collective leadership rather than individual leadership and thus providers have the ability to impede progress in the execution of change even if it is backed by evidence.[10] Thus, understanding how healthcare managers respond to barriers in the execution of change has applications for the successful translation of policy into practice. The second study aim will thus contribute to organizational management of change in PCMH (and other innovation) implementation by identifying how staff buy into new roles and responsibilities, the role of managers and leaders in the perception of frontline staff regarding the change, and how these

affect not just the clinical outcomes but organizational outcomes that are critical to healthcare delivery such as efficiency, provider and staff satisfaction.

Finally, Quality Improvement is a field that is continuously evolving with measures and standards that represent the value of care. The third aim of this manuscript contributes to policy and practice by identifying the consequences of implementation across varying contexts. It identifies what outcomes practices consider important that may be aligned or differ from the original motivation for implementation. Identification of these outcomes is essential, because if practices are restricted by measures and guidelines that discourage innovation in implementation to suit the context, success may be stifled. Recognition of these various outcomes may also encourage practices to embark on the PCMH journey and direct how resources are spent more efficiently towards change implementation while avoiding change fatigue.

1.4 Organization of the dissertation

The rest of this of dissertation manuscript is divided as follows:

- Chapter 2: Provides an overview of the relevant literature and background information regarding organizational change in healthcare and the PCMH model
- Chapter 3: Provides insight into the methodology used for this research, including the characteristics of the practices involved in the study and the rationale behind the analysis used
- Chapter 4: Provides detailed findings of the analysis conducted

- Chapter 5: Discusses the interpretation of the results of this study, the potential practice and policy implications and the strengths and limitations of the study.

Literature review and study setting

2.1 Innovation in Healthcare

Organizations survive by adapting to continuous changes in the environment to increase efficiency and output. Organizational innovation has been the driving force behind dramatic cost reductions and value creation[11]. Health reform, driven by the need for cost reduction and quality improvement, is largely dependent on innovation within healthcare delivery systems[12]. Health care organizations are complex systems that comprise interactions between critical stakeholders from internal actors such as managers, clinicians, administrative staff and patients to external actors such as payers, regulators and policy makers.

Scholars have offered various definitions of organizational innovations ranging from broad constructs that conceptualize innovation as a product or outcome to those that envisage it as a change in work processes[13]. Thakur et al. defined healthcare innovation as the adoption of best practices proven to be successful in a manner that ensures safety of patients, improving outcomes and performance of the healthcare organization[14].

In healthcare, primary healthcare delivery has spurred innovations as a result of the need to improve job satisfaction, patient satisfaction and service delivery. These innovations include the development of primary care teams, open access scheduling, the chronic care model, collaborative physician-patient interaction, group medical visits, and the paperless electronic office[15]. Without proper management, these innovations have the potential to increase the workload for providers who must keep up with an enormous amount of information as performance-based payment systems are promulgated and access for patients is increased.

For some time, primary care in the United States suffered from a declining uptake by physicians, with medical students becoming less interested in entering the field as compared to specialty care[16]. A study conducted in 2008 showed that predicted population growth and aging would increase the workload for primary care physicians by one third between 2015 and 2025[17]. This is significant because access to primary care is a key to improving quality of care and reducing the high medical costs in the US[18]. Decades of research show that primary health care is crucial in the prevention of disease, improvement in population health, reduction of all-cause mortality, heart disease mortality, and reduction in costs of care[19,20]. In particular, studies show that populations served by primary care providers are healthier and more likely to receive the recommended preventive services[21]. These benefits are present to the extent that the features of primary care are present. With an increasing aging population, an increase in chronic disease, and a scarcity of primary care physicians compared to need, investment in primary care is pivotal in reducing the current trend in health care costs and improving outcomes[22–25].

The widely published Triple Aim, coined by Berwick, suggests that improving the health care system in the United States requires the pursuit of improvement in population health, care experience and reductions in per capita costs of care[12]. The Affordable Care Act passed in 2010 made provisions for primary care through payment reform and financial incentives, support for training of primary health care workers and support for innovation in primary care. As a result of this, innovations in care have continued, accelerated by the Center for Medicaid and Medicare services Innovation Center which has been tasked with researching, developing and testing innovative care delivery models[26]. About $10 billion was allocated to the Center in 2010 for planning, testing and evaluation for activities in 2011-2019[27]. This resource allocation has

enhanced the spread of innovations across the United States while encouraging private payers to adopt innovations. One promising innovation in primary health care delivery is the Patient Centered Medical Home (PCMH). Endorsed in 2007 by a coalition of health care stakeholders, the PCMH model has been rapidly adopted for achieving a cost-effective, accessible, and higher-quality health care system[28]. Despite innovations in care, there are still gaps in implementation and questions on how to achieve sustainability and increase the rate of adoption of innovations by providers in a multifaceted healthcare sector.

Adoption of innovations in organizations is influenced by external and internal factors. Rolling out innovations in healthcare organizations can be complicated as a result of the need for complex system restructuring. Introduction of changes to the way providers deliver care leads to disruption in routines, may cause some competencies to become obsolete while creating new competencies, and requires new skills to perform tasks[29]. Furthermore, the successful implementation of innovations in healthcare organizations requires openness to change, clarity of mission, consistency and discipline through implementation, a commitment-based strategy rather than a control strategy, and a willingness to assess performance openly[30,31]. In addition, health care practices, like other organizations, need adequate time to yield the benefits of the implementation of an innovation, as the more time spent on implementation, the more time an organization has to increase its efficiency and transformation of its care delivery[32].

Although researchers have made significant advances in identifying organizational factors and change readiness tests to signal the likelihood of adoption of an innovation in healthcare, there are various issues that are yet to be explored. Research has typically examined the individual factors of participants in a change implementation process and the organizational

factors as discrete processes, rather than an intertwined process. Organizations are made of people who influence and are influenced by the organizational environment. Although a lot of change research provides key steps to follow in change implementation, in health care it is more likely that management decisions to change and responses by frontline staff do not occur in isolation but rather occur in a sort of call and response structure, or an intertwined process. Thus, it may be more appropriate to examine change implementation from both the organizational perspective and the perspectives of the individuals who make up the organization. For example, individuals who adopt an innovation within a practice may do so in deference to the leadership but may feel no commitment to the change or innovation process.

In addition, while there is a plethora of research on strategies for changing provider behavior, researchers have addressed change strategies as prescriptive rather than as responding to the peculiar reasons for resistance within an organization. Given that individuals within an organization may have differing reasons that lead to resistance, a combination of strategies developed in response to resistance may be more appropriate. The importance of this is highlighted by Dearing et al., who highlight that a process may be easy for one person while being exceedingly difficult for another person within the same organization[33]. In addition, adopters may partake in this process for various reasons including: to keep their jobs, to go with the flow, or to prove that the process innovation itself will not work. Thus, understanding potential adopters' views of the innovation can be used to modify communication about the innovation, to improve adoption and implementation.

This present study addresses these issues by examining change implementation through the organizational lens and that of frontline staff in the context of the PCMH model. This study

contributes to the growing literature on leading successful transformation in healthcare. It uses a theoretical approach to explain the relationship among organizational motivations for change, frontline staff responses to change, management responses to the frontline, and the consequences of change implementation. It also provides insights for policy makers in addressing barriers to uptake of innovation in healthcare practices.

2.2 The Patient Centered Home Model Innovation

The Patient Centered Medical Home (PCMH) is a model of care designed to place patients at the forefront of care through care coordination for comprehensive care to improve partnerships between patients and physicians[34,35]. Established on the four corner stones of primary care, patient-centered care, new-model practice, and payment reform, PCMH is an innovative approach to achieving the Triple Aim[12,23]. In the PCMH model, primary care is delivered through a team-based approach consisting of physicians sharing responsibility with physician assistants, care coordinators, patient educators and nurses amongst others. Achieving patient-centered care requires a cultural shift and goes beyond communication to include use of shared decision-making tools, improving scheduling and availability of appointments and giving patients access to their medical information[36]. It emphasizes a relationship-based healthcare service while providing support for patients to manage their health[37]. The new model of practice entails building on innovations from patient safety, continuous quality improvement and the use of electronic medical technology to facilitate coordination, increase efficiency, and potentially improve health outcomes[23]. Finally, the PCMH model is designed around payment reform, which

offers a combination of fee for service, payment per member per month, and pay for performance to compensate providers for implementing key PCMH features which fall outside the traditional primary care face to face visit[23,38]. This is especially important for smaller practices that may not have the resources needed to implement the PCMH framework.

2.2.1 The PCMH: An Administrative Innovation

Given that the traditional definition of innovations in the literature has often focused on the technological rather than administrative innovations, it is important to clarify the type of innovation that the PCMH model reflects. The PCMH model as an innovation is not a discrete model but rather one with several moving parts represented by its various standards that could be achieved in different ways. It is thus an administrative innovation.

Administrative innovations compared to technological innovations are ambiguous and often subject to multiple interpretations. The PCMH model represents an administrative innovation that is complex, not discrete and is designed to affect every part of the organization. As a result, some of the scholarly backlash about the PCMH model has been about the ambiguous definition of the PCMH, and its combination of multiple elements for implementation[39].

2.2.2 PCMH Recognition Structure

In 2008, the National Committee for Quality Assurance (NCQA) developed the first set of standards for PCMH recognition, which it continues to revise yearly. Although other bodies such as the Joint Commission and the Accreditation Association for Ambulatory Care offer certification for PCMH recognition, the NCQA program is one of the most widely used.

The NCQA recognition requirements have gradually expanded from an emphasis on information technology and care management to include emphasis on teams, cultural sensitivity and patient experience[40]. The PCMH recognition is at the site level and all clinicians must apply together at the site. The 2014 standards include Team based care and practice orientation, Population health management, Patient-centered access and continuity, Care management and support, Care coordination, and Performance measurement[41]. To become a PCMH, practices apply, and must meet certain "must pass" elements to achieve recognition. Based on a scoring system, practices can earn 3 levels of recognition. Practices must have a functioning Electronic Health System (EHR) system to achieve recognition at level 3.

PCMH Standard	Element	Points (**total**)
PCMH 1: Patient-Centered Access	**Element A: Patient Centered Appointment Access**	4.5
	Element B: 24/7 Access to Clinical Advice	3.5
	Element C: Electronic Access 12 PCMH 2: Team-Based Care	2
		20
PCMH 2: Team Based care	Element A: Continuity	3
	Element B: Medical Home Responsibilities	2.5
	Element C: Culturally and Linguistically Appropriate Services (CLAS)	2.5
	Element D: The Practice Team D	4
		12
PCMH 3: Population Health Management	Element A: Patient Information	3
	Element B: Clinical Data	4
	Element C: Comprehensive Health Assessment	4
	Element D: Use Data for Population Management	5
	Element E: Implement Evidence-Based Decision Support	4
		20
PCMH 4: Care Management and Support	Element A: Identify Patients for Care Management	4
	Element B: Care Planning and Self Support	4
	Element C: Medication Management	4
	Element D: Use Electronic Prescribing	3
	Element E: Support Self-Care and Shared Decision Making	5
		20
PCMH 5: Care Coordination and Care Transitions	Element A: Test Tracking and Follow-Up	6
	Element B: Referral Tracking and Follow Up	6
	Element C: Coordinate Care Transitions	6
		18
PCMH 6: Performance Measurement and Quality Improvement	Element A: Measure Clinical Quality Performance	3
	Element B: Measure Resource Use and Care Coordination	3
	Element C: Measure Patient/Family Experience	4
	Element D: Implement Continous Quality Imporvement	4
	Element E: Demonstrate Continuous Quality Improvement	3
	Element F: Report Performance	3
	Element G: Use Certified EHR Technology	Not Scored
		20
Level 1 (35–59 points), Level 2 (60–84 points), and Level 3 (85–100 points) 6 of 6 elements are required for each level, Score for each Must-Pass element must be ≥ 50% · Must-pass elements are in bold		

Table 1. PCMH Scoring, Standards and Criteria 2014 Source: NCQA PCMH Scoring

2.2.3 **Evidence For PCMH**

There is evidence that the PCMH model improves the process of care delivery but due to the variation in the implementation of PCMH model, studies have shown varied effects on patient outcomes, cost saving and patient experience[42–47]. The earliest evaluation of the PCMH model was from a National Demonstration project (NDP) in 2006. This first NDP tested the feasibility of the PMCH model across 36 diverse nationally representative practices sponsored by the American Academy of Family Physicians. Using mixed methods, early lessons from this NDP showed that PCMH transformation requires enormous practice redesign, adaptive reserve and

leadership to guide the practice in keeping pace with changes being implemented while avoiding change fatigue[45]. Since then, there has been a rapid growth in PCMH practices and initiatives from 18 states in 2009 to 44 states in 2013 serving almost 21 million patients, with more than 12,000 practices achieving PCMH recognition [48–50]. This rapid expansion is due to increasing positive results, which show that PCMH model has the potential to improve quality of care and reduce costs of care[23,45,47].

Some evaluations of the PCMH model's effect on utilization have shown reductions in emergency department (ED) use and overall admissions rates, increased office and PCP visits and reduction in the use of expensive imaging in patients[51–54]. A systematic review of 19 comparative studies published between 2011 and 2012 showed that the PCMH intervention has a moderate positive effect on preventive care services (Risk Difference [RD] among 3 RCTs: -0.4%-7.7%), moderate positive effects on patient experience (among 5 studies, Effect Size [ES] ranged between -0.36 to 0.42), and low strength of evidence for effect on staff experiences (among two studies with ES ranging between 0.18-0.22). ED utilization was reduced in 5 RCTs (relative risk, RR = 0.81, 95% CI: 0.67 to 0.98) but with no significant effects on inpatient utilization (combined RR 0.98 [95% CI, 0.86-1.12). Overall, no evidence was found for cost savings[42]. In a meta-analysis of 11 studies published between 2008 and 2014, PCMH initiatives were associated with a 1.5 percent significant reduction in specialty visits, a 4.2 percent significant reduction in total spending and a 1.4 percent significant increase in breast cancer screening[55].While some studies show that PCMH practices perform better on process measures for quality including diabetes, breast cancer screening, and depression screening, others studies have shown no effect on these measures[51,56,57].

So far, several demonstrations, pilots and evaluations have been implemented with varying impacts showing that the PCMH model improves process of care delivery but due to the variation in implementation, there are varied effects on patient outcomes, cost savings and patient experience[42–47].

These variations in PCMH outcomes may be a result of important organizational factors that affect implementation of the model[44,46,58–60], that is, factors associated with successful implementation in one context may yield a different result in another one. In addition, improvement strategies that are useful in one organization may not be rational or provide the same value when adopted by other practices[61]. The PCMH model faces several barriers for implementation. Primary care providers are faced with challenges in financial risk and ensuring reimbursement for services. The variation in outcomes may also be due to the challenges of financial risk associated with the PCMH. The investment in electronic health records and other technology to improve patient experience and quality is not only cumbersome, but even after achieving PCMH status, research has found that it costs about $100,000 per full time physician to sustain it[9]. This suggests the importance of adequate preparation and planning to ensure the sustainability of the PCMH. Studies show that transformation takes a considerable amount of time, a high degree of motivation, and external facilitation through coaching for data management and quality improvement[48]. Practices need a predictable system of payment to take on the risk of treating high-cost, high-need patients and to invest in EHR and integrated data systems. Practices also face the challenges of cumbersome administrative effects of multiple reporting streams for performance measures. To help to mitigate this challenge, the ACA provided a 10% Medicare payment incentive under the Medicare Sustainable Growth Rate (SGR)

formula(the Medicare SGR was permanently repealed by Congress 2015, thus ending the 10% incentive)[62,63].

As a result of the policy changes in the ACA, numerous alternative payment models including multi payer collaboratives have been rolled out to improve coordination and standardize reporting measures across practices and payers[64]. Thus, despite mixed results and concerns with the true costs of implementation, PCMH initiatives continue to expand even within private insurance systems and the Center for Medicaid Medicare Services (CMMS) with funding available for implementation.

2.3 Applications of Organizational Theory to the Adoption of the PCMH model

Organizational theory can be used to explain the implementation of innovations within a healthcare environment and how the relationship between external and internal factors contributes to successful implementation outcomes. Organization theory and behavior provide several models that can be applied in healthcare to understand how health care practices are affected by their environment and how members within these practices interact and how these interactions shape their outcomes.

Macro-organizational theories such as institutional theory explain why organizations strive to be like others in their population. DiMaggio and Powell's seminal article on institutional isomorphism discusses the rationale for change and motivations for homogeneity of

organizations[61]. This homogeneity occurs in highly structured industries as a result of uncertainty and constraint. Against this backdrop, organizational change may occur that makes organizations more like others in the same industry without improving performance. In this sense, early adopters of innovations or change may be driven by a desire to improve their performance, but as a result of forces for homogeneity, a threshold occurs such that adoption of the innovation no longer provides the outcomes of performance improvement but only legitimacy for the adopting organization (or the appearance of being bona fide)[61,65,66]. DiMaggio and Powell identify three mechanisms through which isomorphism occurs. These are coercive, mimetic and normative forms. These mechanisms can be applied to the healthcare industry and the motivation for the adoption of the PCMH model.

Mimetic isomorphism occurs when a healthcare organization mimics the practices of successful organizations especially regarding an approach to ambiguous problems, technologies such as the EHR system, and meaningful use regulations that are poorly understood by some organizations. On the other hand, coercive isomorphism in healthcare occurs in the response to a government mandate such as the ACA, or requirements for certain organizations to adopt the PCMH model to maintain funding, e.g. Federal Qualified Healthcare Centers that wish to participate in the Advanced Primary Care Practice (APCP) model demonstration project[67]. Normative isomorphism occurs when healthcare organizations face pressures to adopt practices as expected by their professional associations, such that conforming to these practices make organizations appear legitimate.

It may appear that the expansion of the PCMH model across the United States may have led to increased pressure of adoption by physician practices in order to appear legitimate. That is,

the increased marketing and patient awareness of the model, combined with the linkage of the PCMH model to financial reimbursements, has created additional pressure for adoption by practices[28,68].

For clarity, Rogers defined adoption as the "decision to make full use of an innovation as the best course of action available"[69]. This adoption decision is made on two levels: the decision within the organization and the decision by individuals within the organization[70]. While the organizational decision to adopt is important, the uptake of the innovation within an organization is worthy of the same attention.

2.3.1 Organizational-level factors

There are several motivations behind change implementation within an organization. The decision to adopt an innovation is born out of the recognition of a need, and identification of the potential solution or innovations to address that need[69,71]. Research on the spread of innovation has typically examined the demand elements of adoption with minimal attention to the supply aspect of innovation[72]. From the perspective of the health care organization, the suppliers of innovations may include policy makers, accreditation agencies, insurance companies and technology services that are involved in promoting the elements and implementation of the PCMH model. These suppliers of innovation have a role to play in the diffusion process in order to increase uptake by users of the innovation by producing an environment that either enables or hinders adoption[73].

With the spread of an innovation, the decision of potential adopters may be affected by implementation factors associated with the innovation [74]. Some of these factors may include the cost of implementation. Potential adopters who cannot afford the costs of implementation (but

would otherwise want to be early adopters) may wait until the adoption of innovation can occur at a lower cost or an improved version is available which better fits their needs. In PCMH implementation, adopters may wait until there is a subsidized version such as the Maryland Multi-Payer Patient Centered Medical Home Program (MMPP) before implementing the innovation to offset the potential costs of implementation.

Although the goal of health care practices may be uniform in providing care to patients, they differ in important characteristics ranging from size, provider and staff mix, to location and core patients served. These factors in turn may influence the spread of an innovation and affect its uptake within an organization[75].

2.3.2 Individual Factors

The adoption of the PCMH model by a healthcare practice inherently implies that adoption also occurs at the level of providers and staff within the organization. Individual adoption within an organization may be affected by several adopter characteristics such as age, innovativeness, experience with a similar innovation and perception of the organizational decision-making process regarding the adoption of an innovation. Whereas providers and staff are likely to agree on the rationale of an innovation that leads to better outcomes for patients, they may disagree on the operationalization or implementation strategies for these innovations. This may lead to sluggishness of implementation, slowing down the rate of adoption of innovation, leading to challenges and a potential for early abandonment of innovations without enough time given for the innovation to run its full course. Kruglanski et al. summarize this conundrum this way: “Willing does not necessarily produce doing, and the road from awakened desire to concerted action often is tortuous”[76]. Within healthcare practices, decision-making

tends to occur top down and thus within a practice, providers and staff who are likely to be early adopters of an innovation are linked to late adopters as they are dependent on each other to provide patient care. For example, a provider who lags in adoption of the requirements for the PCMH model may be on the same team with a staff member who has adopted the model. However, if after a while, the rate of adoption within the practice does not improve, it could lead to abandonment that may have nothing to do with the original innovation itself, but rather with the conditions for adoption of the model. Adopting an innovation within a practice may be in deference to the leadership without a commitment to the change /innovation by the adopting individuals. According to Rogers, an authoritative decision regarding an innovation adoption can increase the speed of adoption, but may reduce the likelihood of successful implementation[69]. This is especially true if the individual actors in the system are opposed to the innovation. In addition, Ram and Jung[77] suggest that even among innovative individuals, if the innovation is forced, it may lead to resistance.

2.4 Gaps in the Literature

Given the dissemination of the results of early demonstrations of the PCMH model, research has not focused on the potential differences between the early adopters and late adopters of the model. Research in organizational behavior suggests that there are core differences in the motivation for adoption among early and late adopters of an innovation. Studies show that early adopters of an innovation are motivated by the efficiency gains of the potential adoption and this leads to a norm emergence that later adopters respond to[78]. In

addition, late adopters are more likely to adopt the practices developed by early adopters and be fueled by a desire to achieve legitimacy[61,65,79]. Understanding these differences would help policy makers to ensure that the later adopters are still able to achieve the efficiency gains demonstrated by early adopters of a model.

In order to improve the implementation of the PCMH model and provide value for the financial investments being made, it is critical to examine the attitudes and perceptions of staff and providers within practices adopting the model, acknowledging that providers may already be experiencing burnout from other primary care system reforms as a result of the changes in service delivery and reform measures of accountability such as those included in the affordable care act[80]. There are gaps in understanding the innovation decision process of staff and providers who operate in an authoritative system where decisions are made about the overall direction of the practice, but patient care decisions must still be made by providers. There are also gaps in understanding innovation from a process perspective given that patient outcomes may take a while to become visible after implementation of the innovation.

Whereas studies that examine providers involved in the PCMH process typically examine provider burnout, motivation and satisfaction, we know little about how their perspectives change or are influenced as PCMH model implementation advances[45,81–83]. Understanding how a provider's decision process influences transformation is critical to improving implementation. Results of studies on effects of PCMH on provider's burnout vary ranging from decreased burnout for physicians actively involved in the transformation to increased burnout and change fatigue early in the transformation process[45,84]. These results are taken with caution because practices undergoing transformation may recruit additional staff and providers and thus examining the

average burnout may not be a true reflection of the situation. Despite the variation in results for PCMH outcomes, it is very clear that communication, leadership and culture change are important in effective implementation[84,85].

Working in a multidisciplinary team is a core component of PCMH. The evidence suggests that in a PCMH setting, physicians have to examine their roles by shifting from authoritative to a more team oriented role, and from strict adherence to clinical guidelines to patient-centered care [45,52]. Change is also required on a personal level as team members develop communication strategies and trust as traditional roles change[48].

Given that cost savings are accrued to payers, with benefits in process measures for patients, it is important to understand how implementation of a medical home structure benefits providers, their motivations for continuing with the implementation process and how their perceptions change over time. Studies show that external factors such as the policy environment and perceived administrative burden influence providers perception of a PCMH[58]. Organizational research postulates that response to change may evolve over time. While cognitive responses may shift immediately to change, emotional responses may change as a result of numerous informal conversations between employees after a formal introduction of the change[86]. Thus, observing patterns in attitude towards change for providers may be useful in predicting the timeline for successful implementation of the PCMH model rather than just examining the provider's attitudes to change at one point in time.

So far, there has been little focus on the role of alignment in perceptions of staff and leadership on the transformation process, implementation strategies and the effect of this possible misalignment on PCMH outcomes[29,87]. Although team culture alignment has been

examined in healthcare [88,89] the patterns in alignment are important to understand in PCMH implementation as practices vary by important characteristics such as size, patients served, provider specialty and this may play a role in communication and implementation. Studies that identify the various strategies used in successful implementation of the PCMH, with improvement in outcomes bearing in mind organizational context, will help us to understand the methods by which complex innovations spread within a healthcare system. There are many paths to success depending on what practices have to work with and where they start such that varying structural alternatives and micro level adaptations lead to the same outcomes[90]. As PCMH continues to spread, it is important to understand how the change process evolves in diverse settings and contexts.

There are limitations in the generalization of existing literature regarding the effectiveness of medical homes. First, primary care practices are influenced by their external environment and do not operate in a vacuum. Patient effects seen may be as a result of other interventions occurring at the community level. Secondly, there is a lack in consistency of nomenclature used in PCMH evaluation, which may be reflected in contextual interpretations of the model. Thirdly, most studies examine demonstrations and pilots with very few examining long term effects or post demonstration effects. Thus, effects seen may be as a result of the time at which evaluations occur and nature of practices involved rather than the PCMH recognition process i.e. practices involved may be high performing, and on a longstanding goal for improvement prior to joining demonstration projects[46]. Fourthly, outcomes of cost rarely take into account the cost of implementation to the practice in examining sustainability of the PCMH model from a practice perspective[91].

In examination of implementation of the model, research has identified organizational, structural and cultural factors critical for change. These revolve around structural readiness (e.g. challenges with EHR, staffing models, payment reform and role of population management tools), and cultural change facilitators and barriers (communication, leadership, physician buy in, competing demands) [46,84,85,92,93]. There has been little systematic attention paid to how cultural factors (in relation to staff, providers and management) interact with the context over time and how these affect implementation outcomes[94,95].

Finally, the PCMH model has also not been examined through the lens of an administrative innovation. Like other forms of administrative innovation, little is known about the ideal form of implementation of the model and which parts are the most efficient in producing desired outcomes. Research shows that organizations are more likely to succeed in implementation of an administrative innovation if they learn through adaptation in use (adjusting the innovation to the context) and change catalysis (how organizations use the implementation as an opportunity for additional innovation)[96,97].

2.5 Theoretical Framework: The Diffusion of Innovation Theory

Given the research aims and objectives identified in chapter 1, this study will use the Diffusion of Innovation (DOI) theory, proposed by Rogers, as a paradigmatic perspective for this research. This robust theory has been used in many fields with shared principles such as communication, marketing, agriculture, behavior change and healthcare. According to the framework, diffusion is the process through which an innovation is communicated through

certain channels over time among the members of a social system[69]. DOI is a valuable change model that highlights the process that occurs as people adopt a new idea or technology over time and the interaction between communication and social networks in adoption of the innovation. DOI is useful to identify the factors that allow an innovation to spread successfully, the influence of peer-to-peer interactions and how individuals take up an innovation based on their need.

While there are widely used implementation frameworks such as the Consolidated Framework for Implementation Research (CFIR), DOI theory provides a comprehensive description of the spread of an innovation across time examining what happens at the organizational and individual levels. This study will examine how the traditional perspective of the Rogers Diffusion of Innovation theory applies within healthcare organizations by examining the organizational motivations for adoption, the management strategies used in improving adoption and the individual (staff and providers) movement through the innovation decision process. It examines how well the sequence of activities in the innovation decision pathway explains the adoption of an innovation by members of the practice.

The breadth of the DOI theory is useful in following a practice through the organizational decision process, to the adoption by individuals within the organization and the resulting consequences of adoption. Using DOI contributes to the literature and eliminates the need for an additional framework to be added to the plethora of frameworks that are available in the field of organizational theory. In addition, DOI encompasses concepts from numerous fields and thus presents a comprehensive framework for examining the implementation of the PCMH model, which encompasses several processes for implementation.

Overall, DOI theory focuses on five themes: the decision-making process that occurs in adopting an innovation, the innovation characteristics, the characteristics of individuals who are more likely to adopt an innovation, the communication mediums used in the adoption process and the consequences of adoption. The key components of the theory are presented in table 2 below.

DOI Element	Definitions
Innovation	1. Relative Advantage (degree to which it is perceived as being better than the alternatives) 2. Compatibility (consistency with preexisting values) 3. Complexity (perception of difficulty) 4. Observability (extent to which results can be seen) 5. Trialability (degree to which innovation may be experimented on a limited basis)
Time	1. Innovator adopter categories: The five adopter categories are: (i) innovators, (ii) early adopters, (iii) early majority, (iv) late majority, and (v) laggards. These categories follow a standard deviation-curve. The goal of the theory is not to move individuals or organizations from one adopter category to the other but to identify where people fall in planning or the spread of an innovation 2. Innovative decision process: this is a stage ordered model of knowledge, persuasion, decision, implementation and confirmation that highlights the mental process involved in decision making. 3. Rate of adoption refers to the speed with which members of a social system take up an innovation. It is typically measured by the length of time required for a percentage of members to adopt an innovation.

Communication	The medium of spread of information on an innovation takes place through mass media channels and interpersonal channels.
Social System	Refers to the structure in which the innovation is taking place, the local opinion leaders and social pressures that influence adoption

Table 2. Diffusion of Innovation Theory, (Adapted from Everett Rogers Diffusion of Innovation Theory 5th Edition)

The DOI theory began as a description of an individual's adoption of an innovation but quickly grew to include the organizational perspective. From an organizational perspective, the innovation decision process is collective (the innovation decision is made through a consensus of members) or authoritative (decisions are made by people in power). In addition, from an organizational perspective, the time component of the model includes organizational innovativeness. Organizational innovativeness refers to process of innovation within an organization and is characterized by the Individual (Leader) characteristics including attitude towards change, the internal characteristics of organizational structure (i.e. centralization complexity, formalization, interconnectedness (referring to communication links and social networks), organizational slack, and size and the external characteristics of the organization.

The innovation process within an organization consists of two main stages of initiation and implementation.

1. Initiation
    a. Agenda Setting: identification of problems to be tackled within an organization
    b. Matching: Fitting the problem from the organization's agenda to an innovation.
2. Implementation:

a. Redefining/restructuring: Modification of an innovation to fit the organization structures.
b. Clarifying: Fine tuning the relationship between the organization and the innovation, identification of misunderstandings of the innovation.
c. Routinizing: embedding the innovation into the organizations activities such that the innovation loses its identity.

This framework is useful in examining the innovation decision process at the staff provider level and from a management perspective. Further, it is useful in examining the outcomes and the implementation process from the perspective of managers and staff that represent an organization.

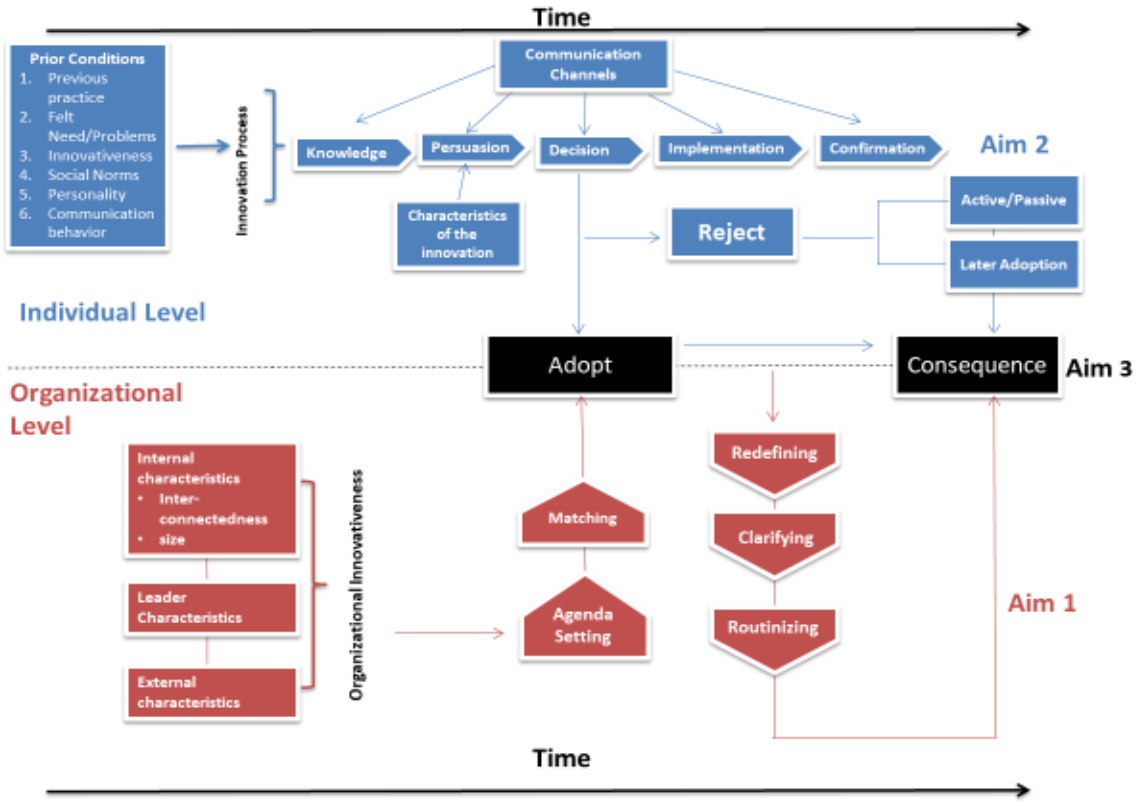

Figure 1. Conceptual Framework and Study Aims: Diffusion of Innovation Theory (Adapted from Everett Rogers Diffusion of Innovation Theory 5th Edition)

2.5.1 Overview of The Application of The DOI Theory So Far

Although the DOI is comprehensive in and of itself, a lot of the diffusion literature has been focused on the characteristics of the innovation itself and not the context of implementation or the movement of the adopters within healthcare through the innovation process. Furthermore, public health interventions are unique as they are likely to involve an interplay of processes and socioeconomic conditions that moderate the implementation of an intervention and its outcomes[98–100].

This study does not seek to prove the relevance of the DOI framework as there is a plethora of research on diffusion of innovation across various industries and in health care including a systematic review of DOI in service industries that focuses on healthcare[101]. In their study, Greenhalgh et al. present an extensive systematic review of empirical research studies of DOI in service organizations and based on this propose a conceptual model for the determinants of Diffusion, Dissemination, and Implementation of Innovations in Health Service Delivery organizations. This comprehensive overview highlights the vast and complex literature around change implementation. They also suggest that research should take into consideration the interaction of contexts with the innovation that influences the adoption of change. Finally, they found gaps in the literature regarding the influence of internal politics and power systems within healthcare on implementation. Around the same time Fleuren et al.[102] conducted a Delphi study to characterize the determinants of innovations within healthcare organizations. They identified about fifty determinants of innovations from the literature. The implementation experts interviewed suggested that the power structures within the organization are more important than the size of the organization regarding adoption.

Green et al.[98] provide a comprehensive review of the DOI theory and the evolution of its many parts. After their review of the diffusion theory and implementation research, they conclude that practitioners of public health filter information about innovation through a lens of their preferences, needs and priorities. They highlight that the gaps in translation of science to practice can be traced to practitioners of health "who insist on practicing their way and believe they know their patients or populations best, and at the smugness of scientists believing that if they publish it, practitioners and the public will use it"[98]. Thus, they suggest that the diffusion or

spread of an innovation involves many moving parts and roles for policy makers and practitioners alike.

This research is not a repeat of extensive reviews on the DOI theory; rather, it is a comprehensive application of the theory to the implementation of an innovation in primary healthcare delivery. It attempts to view the implementation through the organizational and individual levels as change implementation occurs. I propose that the individual innovation decision process is a key part of the organizational implementation process.

Methods

The purpose of this multi-case study was to explore the organizational motivation for the adoption of the Patient Centered Medical Home (PCMH) model, the innovation decision process of adopters in these practices, responses of management to passive adoption, and the consequences of implementation of the PCMH model/MMPP among participant practices in Maryland. This chapter describes the study research methodology including the method rationale, description of the data used, data collection methods, data analysis, issues of trustworthiness and limitations of the study.

3.1 Rationale for Qualitative Research Design

The study seeks to explore the role of internal context in implementation and outcomes of change. Qualitative research methodology is a useful approach for this study as it seeks to view the data through the environmental lens from which it is located[103]. The aim of qualitative research is to uncover an understanding of the social phenomena in natural settings which allows the researcher to see the world through the eyes of others. The theoretical framework used in this study, the Diffusion of Innovation Theory, views healthcare practices through the lens of organizational research. Qualitative research is widely used within organization and management research and provides insight into experience in management and practice[104]. So far, the use of qualitative methods in health services research has been associated with improved insight into the perceptions of health care professionals and has helped to identify barriers to improvement in care delivery[105].

Based on the aims of this study, I determined that a qualitative approach was most suitable as it places an emphasis on the staff and providers' lived experience, and is useful in identifying their perceptions and assumptions of the PCMH model[106]. Purely quantitative methods are unlikely to provide in-depth and rich data that would address the research aims. While a mixed methods study could have been done, the number of cases would not have provided adequate power for a quantitative analysis of implementation outcomes.

3.1.1 Rationale for a case study

According to Yin, the case study method contributes in a unique way to the study of individual and organizational phenomena and allows the research to preserve the meaningful processes that characterize individuals, organizations and contextual conditions. In other words, case studies are useful when examining the contextual factors that may be highly relevant to a phenomenon under study[107].

3.2 The Research Sample

A secondary qualitative analysis was conducted to explore the research aims. The research questions were explored using the Maryland Multi-Payer Patient Centered Medical Home Program (MMPP). The MMPP was a 3-year pilot program (2011-2013) launched by the Maryland Health Care Commission (MHCC), in response to a state law[108]. The MHCC selected 52 practices out of 179 applicants to participate in the Maryland Learning Collaborative (MLC). The goal of the MLC was to provide technical assistance, continuous training and support to practices as they transformed into PCMH and achieved recognition. The goal of the MMPP was to "improve the health and satisfaction of patients and slow the growth of health care costs in Maryland, while

supporting the satisfaction and financial viability of primary care providers in the State".[109] The MMPP was composed of primary care and multispecialty practices across Maryland. As part of the law, the five major insurance carriers (i.e., carriers with over $90 million in written premiums for health benefit plans in the State in the most recent reporting year) were required to take part in the pilot and to support practices that qualified through upfront incentive payments. These carriers included Aetna, Inc., CareFirst BlueCross BlueShield, CIGNA Health Care, Mid-Atlantic Region, Coventry Health Care, and United Healthcare. In addition, the Federal Employees Health Benefit Plan, Maryland State Employees Health Benefit Plan, and TRICARE volunteered to take part in the pilot[109]. The MMPP aimed to serve at least 200,000 patients by involving 50 practices and at least 200 providers from Federal Qualified Health Centers (FQHCs), solo providers, minority-led practices, and Certified Nurse Practitioner offices.

Out of 179 practices that applied, 53 practices were selected from varying geographic settings, ownership types, and specialties to ensure representation of different practice characteristics[109]. These practices represented 330 providers (physicians and nurse practitioners) providing family medicine, pediatric, and geriatric health services to about 250,000 privately insured and Medicaid patients[110]. Later, one of the selected practices withdrew from the program.

The MHCC defined a PCMH as "a model of practice in which a team of health professionals, guided by a primary care provider, provides continuous, comprehensive, and coordinated care in a culturally and linguistically sensitive manner to patients throughout their lives"[7].

3.2.1 **MMPP Requirements**

In order to participate in the MMPP pilot, practices were required to:

- Participate in the MLC convened by seasoned practice transformation experts
- Participate in a shared savings program where practices receive a portion of the savings they generate through better patient outcomes
- Build the care team and deliver team-based care
- Hire care managers to coordinate and support service to complex and high need patients
- Achieve NCQA Recognition as a PCMH level 1 by January 2012 and apply for Level 2 no later than September 30, 2012
- Measure and report on quality and performance using EHR systems [7,111].

3.2.2 **Site Selection for the Transformation Evaluation:**

Of the 53 practices selected to participate in the MMPP, nine practices were selected for site visits to explore the transformation process and staff experiences with the transformation.

The practices were purposively selected to represent the various geographic settings (urban, rural and suburban), practice settings (Privately owned, Hospital owned, FQHC), and practice type (family and internal medicine, pediatrics, and geriatrics) of the practices involved in the MMPP. For example, within the urban practices, privately-owned, FQHC and hospital-owned practices were chosen. Two rounds of site visits were conducted: one early in the first year of intervention and the other in the final year of the intervention. The study population for this dissertation study consisted of eight of these practices (one practice did not complete both rounds of the site visits).

3.2.3 **Study Sites**

The eight practices examined were in Maryland, with five located in urban/suburban areas, and three in rural areas. Seven of these practices were deemed as level 1 PCMH at the beginning of the implementation of the MMPP. By the end of the 3rd year of implementation, five of these practices had achieved level 3 recognition status, while 2 practices reached level 2 status. One practice began (and ended) the MMPP implementation as a level 3 recognized practice. (see Table 3). The practice size was measured by the total number of patients reported in the MMPP application database. Based on the distribution of this variable in the data, I categorized practices into small (<5000 patients), medium (5,000- 10,000 patients) and large (>10,000 patients).

3.2.4 **Sampling Methodology**

A purposive sampling method (from the original evaluation) was used to select the respondents. Purposive sampling is useful in getting a comprehensive view of the transformation process. Purposive sampling in qualitative inquiry is the deliberate seeking out of participants with particular characteristics, according to the needs of the developing analysis and emerging theory[112]. Interview participants were identified based on the information requested by the research team and then nominated by the lead contacts at the practices.

Practice	A	B	C	D	E	F	G	H
Practice Type	Multi-specialty	Pediatrics	Pediatrics	Multi-specialty FQHC	Family Medicine	Multispecialty FQHC	Family Medicine	Multi-specialty
Ownership	Hospital Owned	Free Standing	Free Standing	Free Standing	Free standing (located in a hospital)	Free Standing	Hospital Owned	Hospital Owned
Location	Urban	Urban	Urban	Rural	Urban	Rural	Rural	Urban
Size	Small	Medium	Large	Medium	small	Medium	Small	Large
Number of Providers (including midlevel)	2	8	4	7	1	3	3	15
Baseline* (2011)	1	1	1	1	1	1	1	3
Early Interviews* (2012)	2	3	1	2	3	3	1	3
Late Interviews* (2014)	3	3	3	2	3	3	2	3
Patient Characteristics (Medicare)	20%	0%	0%	7%	17%	27%	27%	8%

**Sources 1) MHCC Reports[113] 2) Case interviews. Discrepancies were resolved by identifying consistencies in reporting of the NCQA level. Where interviews contained the practice NCQA levels, the reported levels were reported instead of the MHCC reported levels. MHCC levels were used were practice respondents did not clearly identify level at the time of the interview.*

Table 3. Baseline Characteristics of Practices

Practice	Round 1	Round 2
A	Staff (3) Provider (2)	Staff (4) Provider (1)
B	Staff (3) Provider (2)	Staff (2) Provider (2)
C	Staff (2) Provider (2)	Staff (4) Provider (1)
D	Staff (4) Provider (1)	Staff (3) Provider (1)
E	Staff (4) Provider (1)	Staff (4) Provider (1)
F	Staff (2) Provider (3)	Staff (3) Provider (2)
G	Staff (3) Provider (2)	Staff (4) Provider (1)
H	Staff (4) Provider (2)	Staff (4) Provider (1)

Table 4. Respondents Interviewed, Type and Number

3.2.5 **Interview Guides:**

Semi-structured interview guides were developed over several months by a multidisciplinary evaluation team contracted by the Maryland Health Care Commission (MHCC), the government commission that sponsored the MMPP demonstration. The interview guides were designed to gain insight into the transformative process of the practices across five themes: the transformation process, staff perceptions and compliance with transformation, health outcomes and disparities, care coordination, and financial costs and savings.

These guides were administered across the sites using purposive sampling of PCMH leads, care managers, physicians, staff, and practice managers. Each guide was tailored to fit each recipient type while maintaining the same structure of questions across all recipients. An interviewer conducted the interviews and a note taker was present for all interviews, which were also audio recorded. As much as possible, interviewees were the same in both rounds of data

collection. The interview guides used in the two rounds of data collection were similar in terms of the questions asked; however, the first round focused on insights from early in the implementation process and the second round explored how these practices evolved.

Within 8 practices, a total of 80 interviews were conducted (i.e. 40 interviews during the first round of site visits and 40 interviews during the second round). Interview guides were field tested by the MMPP staff and clarifications made where necessary. In addition to the interview guides, as part of the MMPP criteria for selection into the program, each practice completed detailed applications that provided structural characteristics of their practices. Further practice information was extrapolated from the physician license renewal obtained from the Maryland Board of Physicians for 2009 and 2010. Together, these two sources provided additional information on structural and contextual characteristics of practices in the study including ownership type, location, patient panel size, electronic health record capacity, number of providers, and percentage of Medicaid/Medicare patients served. Information on each practice's NCQA recognition status in 2012, 2013 and 2014 was obtained from reports by the Maryland Healthcare Commission. Data were stored and safeguarded in a protected drive only accessible to the data collection team.

3.2.5.1 **Information needed for Study**

To achieve the aims of the study, contextual and perceptual information were required. Contextual information includes knowledge about an organization's structure, staff mix, and population served. Perceptual information is critical as it relates to uncovering the views of

participants on their experience and how this experience influence their attitudes towards the change being implemented, their expectations and how those expectations were met.

The study aims were addressed through a secondary data analysis of the semi-structured interview data and administrative data, which provided contextual and perceptual information. The interview questions that address the study aims are presented in the table below.

Sample Interview Question
Aim 1: To explore the organizational motivations for change implementation
• When did you become a PCMH? • What motivated you or your practice to apply? • From your perspective, what are the incentives or benefits to your practice for being a PCMH?
Aim 2: To identify how adopters move though the innovation decision process
• How do staff and non-providers perceive the program? • Has there been a turnover as a result of the transformation since the start? How has morale increased, decreased, remained the same? • Have you seen or experienced resistance from staff or providers? • How effective have the champion(s) been at engaging staff? • What methods did they use to motivate staff? • How do you ensure staff/providers comply with the new transformation activities? • What are the consequences of the failure to meet requirements? • Tell me about the first efforts applied to transform. What strategies did you employ? What activities were generated?
Aim 3: To identify the consequences of implementation of the PCMH model

- Have you observed changes in work satisfaction among providers/staff?
- Has the transformation process changed your practice ability to support patients with complex needs?
- In your opinion, do you feel the practice has been successful in transforming? Which activities have attributed to that success? What were the facilitators?

Table 5. Sample Interview questions from In-Depth Interviews

3.3 IRB APPROVAL

In compliance with the Johns Hopkins Bloomberg School of Public Health (JHSPH) and JHSPH Institutional Review Board (IRB) requirements, all required human subjects research and research ethics training was completed prior to the data analysis. This study involves secondary data from a study currently approved by the JHSPH IRB and the Maryland Department of Health and Mental Hygiene (MDHMH) entitled: "Further Analysis of the Maryland Multi-payor PCMH Program: Critical Factors for Success in Achieving Patient-Centered Medical Home" IRB No: 00006709. I was listed as a student investigator in accordance with the IRB and the research proposal was approved by the JHSPH IRB and the MDHMH IRB.

3.4 Data Analysis

Due to the large number of cases involved in this study and the secondary analysis of previously collected data, the challenge throughout the study was to gain a full grasp of the data and assess its accuracy, completeness, and usefulness in answering the research aims and objective. The dangers of a large data set are that it can quickly become overwhelming if a clear strategy is not utilized for data reduction and analysis. In addition, because this was a secondary

data analysis, I had to become very familiar with the data set and ensure that it could address my research aims. To this regard, I began the formal process of data analysis by reading through a lot of the cases to get familiar with the interviews starting with a vertical approach (one case at a time) and the thickest transcript. Subsequent transcripts were chosen randomly until all were completely reviewed. Once a complete read was done, I then re-read about twenty transcripts from four cases and applied line by line inductive coding. Following this I created a code book and tested this code book on the remaining cases, adding and refining codes as seemed fit. The next step in the process was to share samples of the code book with two researchers (JAM and CF). One colleague confirmed the rationale behind the code book definitions and the other colleague tested these codes on two interviews to check for consistency based on the definition of codes and application to the data. Discrepancies in code definitions and applications were resolved by two researchers (CF and EEA) to meet the threshold for reliability.

The next step was to identify how each of the respective codes fit under the conceptual framework, and then these codes were collapsed or renamed in line with the framework. As a final step, two researchers coded one transcript to ensure consistency in transcription with the new code scheme and resolved any differences. Qualitative analysis using thematic coding informed by the conceptual framework was performed on the transcripts using MAXQDA, a software-assisted coding application. Thematic coding was a combination of inductive and deductive coding, with a final codebook developed based on the conceptual framework, and emergent coding as themes evolve from the data. Thematic analysis followed the method of constant comparative analysis for grounded theory.[114] Thematic analysis is useful in finding

relationships, systematically observing data and is a good tactic for data reduction without losing the context and for focused interpretation of data.[115]

I proceeded to recode all the interviews with the new coding scheme developed, while creating memos to capture the emerging themes, issues that needed clarification and potential follow up points to examine across the cases. During analysis, attention was paid to respondents' descriptions and labeling of events, data were constantly compared to codes, and the codebook was revised as appropriate. Following the completion of the thematic phase, within-group comparison was done, and a case summary of emerging themes was compiled. In accordance with Yin's guidelines for case study analysis[107], cross-case analysis was conducted to examine the similarities and patterns among respondent types, and by practice type, while highlighting any deviations from the theoretical underpinning and expectations. Insights continued to be documented in memos as data analysis progressed to identify overarching patterns and differences in the innovative decision process of individuals involved in the transformation to a PCMH within and across cases. By using the theoretical framework, ideas that emerged from the data were reconfirmed as the analysis progressed, checking and rechecking data to avoid making cognitive leaps and linking data systematically.

Overall the research approach was three-fold across the three study aims. First, I examined and compared the data (themes and patterns) across the respondents in each practice. Secondly, I compared the connecting threads in data and themes across each practice including examination of the practice characteristics and context. Thirdly, I compared the themes to the conceptual framework and literature on innovation adoption. Based on my analysis and synthesis, I generated conclusions and several implications of this study.

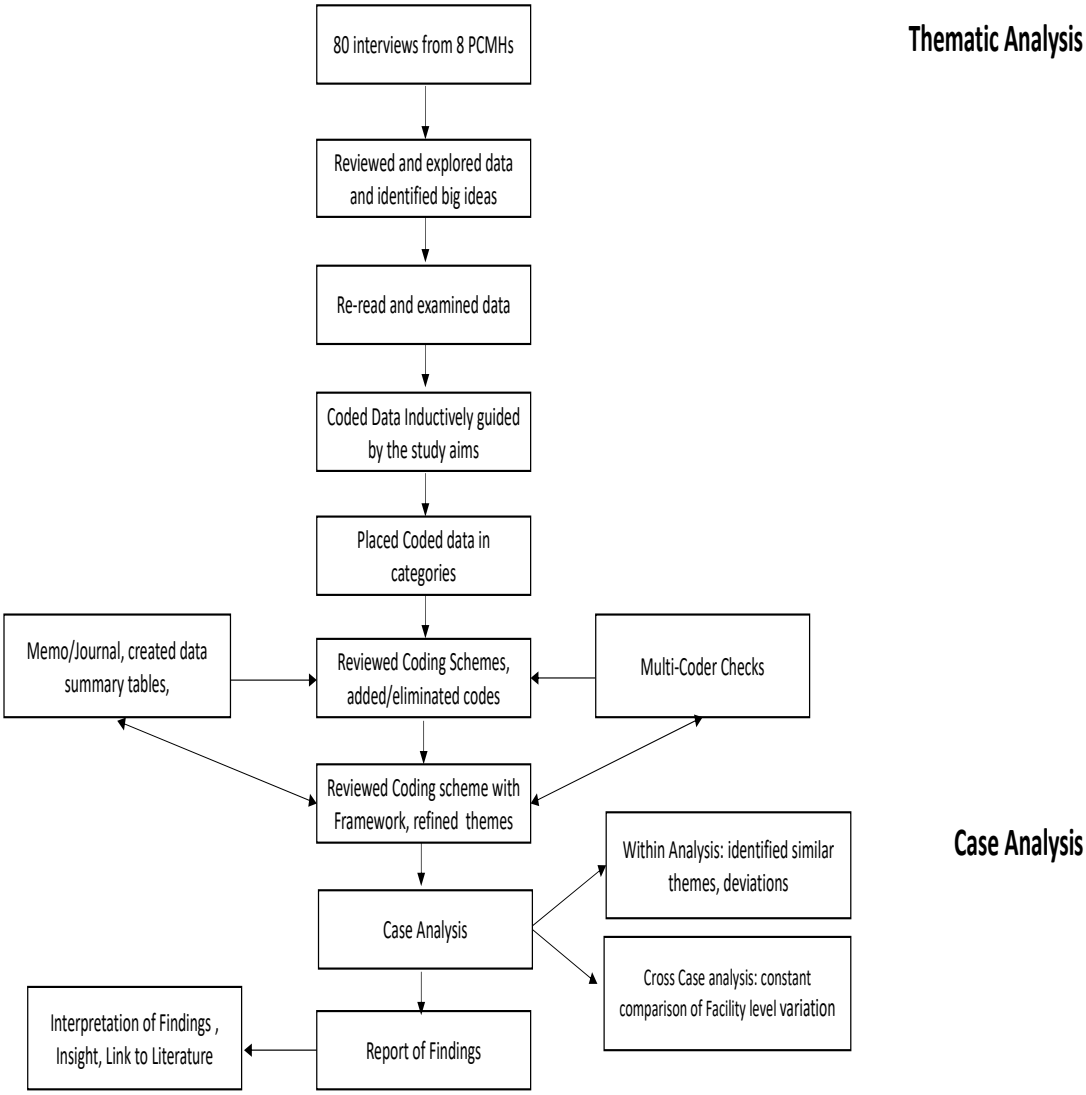

Figure 2. Data Analysis Process [1]

3.4.1.1 **Issues of trustworthiness**

In qualitative research, trustworthiness is used to provide a measure of rigor and validity of the research findings. Lincoln and Guba defined the criteria for trustworthiness of methods, which include credibility, transferability, dependability and confirmability[116,117].

Credibility: To ensure the validity of the study, I triangulated multiple data sources to provide a more robust demonstration of the organizational motivation, innovation decision process of staff and providers, and the consequences of implementation. These data included the interviews, site application data, and the Maryland Health Commission reports. Interpretive validity was checked using memos to ensure the clarification of the researcher's assumptions. In addition, rival hypotheses based on discordant and discrepant evidence in the literature was sought that differed from findings to challenge the emerging results of analysis.

Dependability: As the coding scheme was finalized, to improve reliability of findings, multi coder checks in terms of definitions and applications of code to interviews was done to develop a consensus on meaning. Discrepancies in application of codes were reconciled.[106] An audit trail was maintained to chronicle the rationale for decisions made during analysis and interpretation.

Confirmability: To certify that the data can be traced to the original source, a systematic naming system for transcripts was done. This provides a way of accessing the study findings if necessary.

Transferability: Due to the qualitative nature of the research method employed, I sought to achieve transferability, [i.e. the degree to which the results of the study can be transferred to other settings][118] rather than generalizability,[i.e. to infer that a causal relationship is valid in varying individuals, settings, and treatments][119]. Transferability, unlike generalizability, is a judgment made by the recipient of the findings. To address transferability, rich and thick

descriptions of each practice were done through case summaries to allow for relevance of the findings in a broader context[120].

Results

The purpose of this multi-case study was to explore the implementation of the PCMH model across practices through the lens of the Diffusion of Innovation Theory. This study first examines how organizational motivations shape agenda setting and fit for the PCMH model on the organizational level. It then goes on to examine how adopters move through the innovation decision process based on communication about it, individual factors of the adopters, and characteristics of the PCMH model. Based on the preceding, the study then follows the reaction of providers and staff to the model and examines processes to redefine, clarify and routinize the model. Finally, this study examines the resulting outcomes from implementation of this innovation in practices.

Based on the aforementioned, the findings are divided into four broad categories documenting the process from the organizational decision to adopt the model, the response to the implementation of the model by frontline staff and providers, the change implementation process, and the perceived consequences of implementing the model.

For the organizational decision, the practices were motivated to be a part of the PCMH demonstration as a result of a desire to improve patient outcomes and participate in the financial incentives available through the MMPP. The decision to participate was made by the leadership/ownership of these practices. Generally, adopters (staff and providers) agreed with the rationale for the model but were primarily hesitant to embrace the implementation of change due to an anticipated increase in workload as a result of implementation. For implementation, across most practices, the reaction to the model implementation was mixed i.e. enthusiastic and

supportive about change or resistant to the proposed changes. Regarding the implementation process, a lot of these reactions improved or stayed the same as practice leaders employed strategies targeted at the varying reasons for passive adoption or hesitancy in order to move adopters through the innovation decision process towards active adoption. In general, participants reported a perceived improvement in patient outcomes, process efficiency, teamwork and communication as a result of the implementation.

4.1 Deciding to Implement Change

4.1.1 **Agenda setting: Organizational Leadership and how the adoption decision was made.**

Across all practices in the study, the decision to implement the model was made in an authoritative fashion by senior administration, management or the owner(s) of the practice. In some practices, a clear decision and agenda setting process[1] for this emerged. The major form of agenda setting across these practices was through the exploration of the potential usefulness of the model to the practice. Leaders examined the options for implementing the model, the requirements of the MMPP collaboratives, and checked to see if these aligned with their vision of the practice.

[1] Check Chapter 2 for definition of Agenda Setting

Not all respondents were able to clearly identify the decision process for their practices in that they were not aware of how the decision was made. All the practices that articulated an agenda setting process [practices A, B, E and G] were small practices except practice B, which was a medium sized practice. No clear pattern occurred in the context of the practice regarding ownership and practice type. Across these practices three key themes were reflected in the decision-making process, which are categorized here as (1) ownership goals, (2) finding the right fit, and (3) taking time, pacing the change.

4.1.1.1 **Ownership goals:**

In Practice B and E, the Senior partner [owners] were behind the decision to adopt the model. The decision to join i.e. implement the PCMH model and join the MMPP thus was influenced by the owner's personal motivations and preferences for practice as demonstrated below:

> *"I was already practicing this type of medicine. My approach to medicine let us transform smoothly. I work for myself and I don't care how much I make. Patient care is my priority over how much money I make. Since I cover everything, my staff let me practice medicine the way that I want to practice. I am part of [County Name] Physicians Group. I'm private but I am able to offer health insurance and rent this space because I am part of this group. There are certain requirements, but I already meet these and I don't feel like I have a boss that's watching over me" [Physician owner, Practice E]*

"We started in – it's been a year and a half ago, January of 2010. [owner name] has always had a dream of becoming a medical home; we were already trying to work towards that, so when we heard about the program, we knew it would help" [Practice Manager, Practice B]

4.1.1.2 **Finding the Right Fit:**

Another way the decision to adopt was made was by leaders examining how the MMPP collaborative and the PCMH model would fit their current practice. This was mostly done through observation (site visits and conversations) of practices already in the collaborative and or implementing the model. For example, in Practices F and G, prior to commencement of implementation, the champions visited other practices to see how they were implementing the model and if they could make the same changes in their practice. They also attended the collaborative to hear first-hand accounts of implementation from other practices.

Although the leaders were already interested in the model, the final decision was based on gaining increased knowledge about the MLC through attending collaborative meetings and observing the implementation process in some practices. After this, leaders felt convinced that they could partake in the MMPP and implement the model. In other words, some leaders had to see it to believe it. This is highlighted by the following statement:

"Our initial effort was to attend the initial MLC meeting [CEO and Practice Manager] to get involved in the program and make sure their goals aligned with ours" [Practice manager, Practice F].

In coming to the final decision, other practices compared the financial returns for joining the

MMPP versus another PCMH program. The following statement highlights this:

> *"We originally went into CareFirst's PMCH. We were also accepted for the state multi-payer. We sat down and derived numbers on what would be the most beneficial for the practice, and what program had the most patient volume-based payments. And we decided to go with MD [MMPP], because you can only go with one" [PCMH Lead, Practice A]*

4.1.1.3 **Taking time, pacing the change**

Finally, in some practices as part of the final steps in the decision-making process, leaders took some time to understand the change needed to implement the model and get a full understanding of the change steps before fully committing to the model. For example, one staff at Practice C described that once the leadership had made the decision to adopt the model, they came up with a plan and *"We didn't change anything or introduce anything until we had a handle on what we were doing and where we needed to go with it".*

4.1.2 **Organizational Leadership Characteristics**

In examining the decision making from the organizational level, some leadership characteristics were highlighted by respondents demonstrating how involved various leaders were with the transformation process. This also demonstrated how leaders involved staff in the decision-making process and implementation of change. This is worthy of note as it provides more insight into the decision-making process for the practices in the study. For example, one

medical assistant remarked that regarding involvement in the PCMH model despite it being a practice wide transformation that:

> *"I can't really answer that, only because I have not been participated a lot with the PCMH and the higher-ups that are dealing with it. As far as levels go, I couldn't tell you what level we've achieved." [Medical Assistant, Practice A]*

4.1.2.1 **Visionary Leadership, Inspiring others to change**

Although leadership characteristics were not clearly identifiable in all responses, some respondents were able to clearly articulate this. For example, in practice B, the leaders of the transformation (the senior partner and office manager) were described as "strong leaders" who were very positive about the transformation with skills that were complementary to each other. The Senior Partner (also the owner), was described as a "real visionary", while the office manager was described as a strong leader. The Owner was described as having a "direct opinion" on everything done in the practice.

> *Who were the champions leading this effort (to transform) in your practice? What role did they play?*
>
> *[Senior Partner] and [Name], the office manager. They are both strong leaders and are very positive about it, I feel like it has helped me be positive about it, walking into something [PCMH] not knowing what I was going to do. My background is public health, so I have a little experience with case management. They really want this to work in our practice. [PCMH Lead, Practice B]*

In this same practice, the practice owner described the leadership as being demonstrative of the actions needed to achieve the PCMH requirements:

> *"We've tried to show people by walking the walk and talking the talk." [Physician Owner, Practice B]*

In another practice, a small private-owned pediatrics practice, respondents described that all activities were dictated by the owner who was described as very thorough and the "heart and soul of the practice".

> *I don't really know a whole lot about the program, as it was all in place when I got here. I didn't notice anything different about this practice, other than [owner name] is very thorough. – [Staff 2, Practice E]*
>
> *Everybody does their little bit, and when it's put together, it's the big picture. We have [owner name] as our provider and she's a knowledgeable person to go to. She's heart and soul. It's really nice to have somebody to shadow and mirror the same expectations in the quality of her work. – [Staff 1, Practice E]*
>
> *[provider name] was pretty much already doing everything. She's very detailed and very thorough. – [Practice Manager, Practice E]*

4.2 Organizational motivations for change

In about half of the practices in the study, the CEO or owner was described as the driving force behind implementation of the model. Staff in one practice felt that they had support from its leadership irrespective of the outcomes of implementation.

"We've had great support from our CEO and our board to implement the program regardless of initial costs and unclear long-term results". [PCMH Lead, Practice F]

Along these lines, some of the motivations to improve patient care seemed to stem from the personal mission of practice leaders. Some provider owners and leaders are credited with driving the desire for the model as a result of their investment in improving the socio-economic conditions of their patient population. Broadly speaking, there were five organization motivations for change identified which were; improving patient quality of care, outcomes and efficiency, compatibility, financial incentives, aligning with the future, Legitimacy and recognition. These are described below:

4.2.1 Improving patient quality of care, outcomes and efficiency

Regarding organizational motivation for the adoption of the PCMH model and participation in the MMPP, the overwhelming finding across all practices was a desire to improve patient quality of care and outcomes, improve efficiency and partake in financial rewards presented by the MMPP structure. All the practice leaders identified that they wanted to improve the quality of care and patient outcomes. This motivation is especially highlighted among provider owners and managers. For example, one of the providers in Practice G who has been in practice for over 30 years and serves as an administrator described the motivation for joining the MMPP and becoming recognized was *"Better quality of care for my patients. That's the sole incentive from the clinicians' point of view."* Another provider (non-owner) in Practice A expressed the same sentiment:

"Basically, I'm a geriatrician and an internist I have seen that we need better communication, better coordination so we can focus on the patient outside the hospital. With the chronic conditions, it's hard for myself to address every small aspect. That was the motive to get involved in PCMH: so, we can get better care coordination. It will be helpful to the patient as well as the providers and the team." [Provider, Practice A]

4.2.2 **Compatibility**

While all the practices indicated a desire to improve patient outcomes, an overwhelming majority also highlighted that the PCMH model was in line with how they practiced, thus providing a motivation for transformation. Some respondents expressed that they felt their practices were already technically PCMH's without the recognition. For example, one provider owner (Practice E) commented, "I felt that I ran a patient centered home anyway and so it was to learn more about how to run one." In addition, respondents at FQHC practices also expressed that the PMCH model is closely related to the structure of practice for FQHCs. One respondent expressed this view clearly:

"When we looked at the standards, we said, "This is what we do as an FQHC." There are things we could do to help the patient and provide better outcomes, but this is what we do. It was an easy decision for us to become part of this program." [PCMH Lead, Practice D]

There were also practices whose participation in the MMPP and PCMH implementation was as a result of a prior desire to become recognized long before the MMPP opportunity became available. The MMPP thus provided an opportunity to fast track the transformation process. A provider owner (Practice B) expressed that joining the MMPP was a *"way to have some help*

making my vision of having our practice really be a medical home in every sense of the word a little faster". A lead in another practice expressed the same rationale as seen below:

> *"When the multi-payer demo started, one and a half years. Prior to that, [name](CEO) and I were talking about implementing this sort of model at our practice…. It seemed to make sense to become part of the pilot so that we could receive the support we needed, such as through the MLC." [PCMH Lead, Practice F]*

For these practices described above, the collaborative meetings were especially helpful for the implementation process that would have been difficult without the guidance provided. In addition, for some practices the timeline required by the collaborative to become NCQA certified was very aggressive and short, i.e. less than 6 months, due to delays in joining the MMPP making the support from the MLC coaches valuable in meeting the application deadline.

4.2.3 Financial Incentives

Although not all practices were eligible to receive all the financial incentives provided by the MMPP, respondents across all practices indicated a financial motive for joining the MMPP and implementing the PCMH model. The financial incentives provided with the MMPP include the Per Member Per Month (PMPM) payments, the fixed transformation payments and shared savings received from insurers.

As expected, not all respondents were aware of the financial incentives attached to transformation by virtue of their roles in the practice. Among those who were aware, which typically included practice managers, provider owners, and care coordinators, they indicated that financial incentives provided by the MMPP would ease the financial burden required to implement the model in addition to providing support for other resource intensive practice goals.

Across most practices, the financial incentives were crucial in being able to employ a care coordinator part time or full time, employ additional staff or raise staff salaries.

Unsurprisingly, the identification of a financial motivation for application was clearer in free-standing practices. It was also expressed by providers who were owners or involved in the leadership of the practice. Other providers did not identify with this as a motive for participation in the MMPP and were more interested in improving patient outcomes. One provider expressed:

> *"I'm sure there's financial benefits for the hospital. I know they talked about some, in the beginning. I do recall that the hospital threw out that: 'We'll get this kind of grant money, and if you get involved, you'll get a percentage of this as you hit some of those quality benchmarks.' So financial incentives are one thing, but for me, it's the improvement in patient care." [Provider, Practice G]*

Despite the exemption of Medicare patients from the shared savings for the MMPP, and the uncertainty of reaping financial rewards, the PCMH lead in an FQHC with a high number of Medicaid and Medicare patients remarked that:

> *"I know that, with PCMH, we're supposed to be getting shared savings. I know that the PCMH program is not doing shared savings with Medicare patients, so we aren't going to receive shared savings from them. And we haven't received an up-front reimbursement like some practices have. So, we agreed to participate in this pilot for PCMH, knowing that we weren't really going to get any kind of incentive." [PCMH Lead, Practice D]*

4.2.4 **Aligning with the future**

Most practices were adopting the model to align with health care reform and position their practices in line with the future direction of the health sector policy. To this extent, some respondents identified their practices as forward thinking with regards to aligning with the emerging trends in healthcare.

Using the lens of institutional isomorphism, the incentive in some practices was more coercive than mimetic in the sense that they were responding to changes in policy as a result of dependence on an external agency. For example, the PCMH lead of an FQHC practice (Practice D) stated that *"because PCMH is the wave of the future, and FQHC is funded by HRSA, HRSA is pushing all FQHCs to become PCMH."* Meanwhile the PCMH lead of another FQHC practice (Practice F) commented: *"I think we're a little ahead of the curve since we've been proactive with the way health care is going".* For other practices, this motivation was more mimetic due to uncertainties in the field. A provider from (Practice G) highlighted that the hospital owners of the practice recognized that healthcare reform was taking place and *"wanted to get a jump start on it."*

4.2.5 **Legitimacy and recognition (we do very good work and here is the proof!):**

Some practices indicated that while they have always provided great quality of care, they had not been able to prove this. The PCMH recognition thus would allow them to show proof of this and signal to patients and insurers that they are meeting certain standards of quality of care. This is described in the following statements:

"We've been offering great quality care for a long time. We weren't always able to prove it. If someone were to come in and ask, "How are you doing this," or "How is it going," there was a time when we couldn't really show them that because we're still a very new organization, just about eight years old. Now, we're finally getting to a point where we can say yes. We do very good work and here's the proof." [PCMH Lead CCO, Practice F]

"The other incentive is that with some of the other insurers, like CareFirst, the fact that we're recognized gets us a higher reimbursement for those particular patients. It also means that we are practicing at a higher level. I think a lot of practices who aren't in a PCMH may be doing these things, but having the recognition validates it." [PCMH Lead, Practice G]

Practice	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**
Practice Type	Multi-specialty	Pediatrics	Pediatrics	Multispecialty, FQHC	Single Specialty	Multispecialty FQHC	Single Specialty	Multi-Specialty
Ownership	Hospital Owned	Free Standing	Free Standing	Free Standing	Free standing	Free Standing	Hospital Owned	Hospital Owned
Location	Urban	Urban	Urban	Rural	Urban	Rural	Rural	Urban
Size	Small	Medium	Large	Medium	Small	Medium	Small	Large
Level Round 1	1	1	1	1	1	1	1	3
Mid way assessment	2	3	1	2	3	3	1	3
Level Round 2	3	3	3	2	3	3	2	3

Organizational Motivation for Joining MMPP								
Patient Outcomes	✓	✓	✓	✓	✓	✓	✓	✓
Financial Incentives	✓	✓	✓	✓	✓	✓	✓	✓
Compatibility	✓	✓	✓	✓	✓	✓		✓
Policy Alignment	✓	✓	✓	✓		✓	✓	✓
Legitimacy						✓	✓	

Table 6. Organizational Motivations for Change

4.3 Perception of the model and change implementation among providers and staff at healthcare practices.

4.3.1 **Initial Response to Change**

Across a majority of practices, adopters were informed about implementation through formal staff and provider meetings. Most of the practices focused messaging on the model around the relative advantage of adoption for improving workflow, the observability of the model through the recognition it brings via the privilege to be selected for the MMPP, and the benefits to patients and practices. It was not clear that in any of the practices, the financial implications were communicated to staff and providers who were not in a management capacity.

Once the decision was made to implement the model, in most practices, key leaders were informed followed by providers, then staff.

Across practices, respondents described the response to change as either overwhelmingly positive, mostly mixed, or mostly neutral. It was clear that most practice staff and providers agreed on the concept, but the reception to the implementation varied.

4.3.1.1 **Mostly favorable**

An overwhelming favorable response to the model was found in one practice, a small privately-owned practice (Practice E) with one provider who was also the owner. Staff were receptive to change and complied with the owner's directive. The practice manager described the response of staff to the model as positive and that they were usually "on board with anything that we need to change or implement".

4.3.1.2 **Mostly Mixed**

In the majority of practices, while some staff and providers at the same practice were described as enthusiastic about the proposed changes, others were not. Sometimes in practices, the respondents all agreed about the perceived perspectives of staff and providers in response to change and other respondents had differing opinions. Because the decision to implement was authoritative, practices found work arounds to bypass resistance and continue with the implementation. For example, in one large practice (Practice C) which was free standing, located in an urban area, the respondents described that leaders were dragging the providers along in the early phases of implementation. Among providers who were resistant to implementation,

the practice adjusted by assigning nursing staff to some tasks for resistant providers as described below:

> *"It's the whole smorgasbord. Myself and a couple of the other providers are excited. …. I know at least two [providers] who would rather not, and we know that their nursing staff is going to be doing a lot of their charting because they're not interested. And then we've got people all along the spectrum." [Provider, Practice C].*

Respondents in another (Practice G) a hospital owned and located in a rural area, described a neutral and positive response to the model. According to the staff respondent, some staff see it as status quo and basically what they had been doing all along. Providers were on board and the champions were very excited for implementation to take off, given the delays they had in initiating implementation. Here, a lot of the implementation activities were carried out by the front staff (e.g. medical assistants, front desk staff) and so the PCMH lead described that providers may have less exposure to the details of implementation compared to the staff.

> *"We have a physician on board… our physicians are on board. I don't think they fully have a grasp of what a medical home is – a lot of it is behind the scenes, things with the front staff. I think what they're seeing is the care coordinator. That's a little more in-your-face." [PCMH Lead, Practice G]*

This mostly mixed response to change was also seen in another hospital owned (Practice A). In this practice, staff response was mixed. The office assistant respondent described that because none of the front desk staff were involved in the planning design of the implementation, there was a little bit of resistance because the change proposed was practice wide and on a large

scale. Here, the providers were described as very engaged and excited about the model implementation:

> *"We were a pretty excited practice to begin with. We were new, we had young new doctors who were fun to be around – and they still are. I don't think anyone could be any more engaged." [Office Assistant, Practice A]*

In another practice (Practice F) a different expression of mixed responses to change were found. Here, while the MD/Lead thought that provider and staff had been supportive of implementation, the practice manager described a more mixed response to change as a result of differences in backgrounds of providers and staff. Regarding staff, the practice manager stated that only about *"30% of staff are compliant and enthusiastic about the program"* and the provider response is mixed as well:

> *"Three providers have been great with the transformation; two have been resistant. I think their background has played a role; for instance, physicians who came from the emergency department where they don't have any sort of PCMH model have shown the most resistance with the program." [Practice Manager, Practice F]*

4.3.1.3 **Mostly Neutral**

A mostly neutral response of staff and providers to participation in the MMPP was found in one practice (Practice H) which started in the MMPP as a level 3 recognized PCMH. Here the PCMH lead (also the Medical Director) described providers as "content with the program but not enthusiastic about the overall program". The lead believes that this response was a result of so

many changes occurring simultaneously at the practice i.e. *"We throw so many things at people… it's hard to focus."* The care manager buttressed this by describing that staff and providers perceived the implementation as "something else you need to do."

4.3.2 Reasons for Passive Adoption Among Providers and Staff Across Practices

Across the practices in the study, respondents articulated five main reasons for staff and provider resistance to adoption of the model. These reasons were perceived increase in workload, poor knowledge and uncertainty, reluctance to give up old habits, perceived complexity and perceived loss of control.

Perceived workload: This reason was identified by respondents across all practices. In some practices, this was felt more by providers and in others more by staff. Staff expressed negativity towards the model because they perceived it as a lot of extra work for which they were not being paid. A practice manager [Practice C] highlighted that this concern was confirmed with the implementation of the new EMR system, resulting in increased time required to complete tasks and providing care becoming more time consuming as a result of the number of things that need to be 'clicked.' A similar sentiment was found in providers in another practice who view their workload in clicks as described below:

> *"They [providers]have been our toughest crowd. That is the group that they feel that they have more work than anyone else and they have less time available to do these tasks. They count everything in clicks. The number of clicks that it takes to get from this template to*

this template to EHR. They absolutely perceive it as just additional work."- [PCMH Lead care coordinator, Practice F]

Poor Knowledge and Uncertainty: This reason was described by respondents in an overwhelming majority of practices. Respondents described that some providers and staff were unclear about why changes were being implemented in the practice or did not understand the PCMH model and the requirements for recognition. As provider (Practice D) respondent described when asked about the staff perceptions of the program, he described their view of the model as "Tedious, overwhelming, unnecessary, hard, but again it's from a knowledge deficit." Even in Practice H, a practice that was already recognized prior to the MMPP, the care coordinator described *that "in the beginning it was a little rough going because it was new and they [staff] really didn't understand what we were trying to do, so it took several meetings and more interaction with the staff in education to make sure that they understood what the goals [of the PCMH model] were."*

Reluctance to give up old habits: in about half of the practices, respondents identified the reluctance of mostly providers and some staff in giving up old habits of patient care delivery as a reason for passive adoption or hesitancy. Respondents described that there was a lot of negativity early on because staff did not want to do anything different and providers were unwilling to make changes. This reluctance to change was perceived to be present among older staff and providers.

"They [providers] want to keep what they've been doing because they feel like "if it ain't broke, don't fix it". So, I think that we had a little bit of resistance, especially with some of our providers that have been here much, much longer." [Staff, Practice C]

Perceived complexity: The perceived complexity associated with the model implementation was mostly linked with the documentation requirements of the model. To meet the documentation requirements for PCMH recognition, several practices used an EHR system. The existence of an EHR within a practice is required for practices to achieve level 3 PCMH recognition. In some practices, changes to an EHR system occurred gradually prior to implementation of the PCMH model/MMPP program. In others, the conversion from paper documentation to EHR occurred at the same time as the implementation of the model. The EHR system thus gradually became a core part of implementation as practices were tracking their progress and performance through this system requiring providers and staff to properly document their care. This provided a challenge across many practices as demonstrated below in this statement.

One of the harder things to achieve is that there's so many policies that you have to have written down. We had a policies and procedures manual, but it needed to be more detailed, and getting to that level of detail was difficult. I think that was harder because it needed to be written and rewritten while we were still doing the business side of things. We needed to be able to flesh them out and show them how we were doing things. [Provider, Practice B]

Perceptions of complexity were modified by the individual type and experience with electronic systems. For example, compared to younger staff, older staff who were trained with paper system were having a hard time adjusting to the change with the electronic system.

> *"So, while they're really doing a great job at learning to do it, the one nurse I work with, I was the nurse supervisor, she said when she started here, she never even turned on a computer in her life, so that was huge. She had to learn like from step one on as far as doing her whole job eight hours a day five days a week by a computer, so every time we have an upgrade in the EHR, or whatnot, that it can be difficult for her to catch on and it just wasn't something she was really used to doing" [Care Coordinator QI, Practice F].*

The effect of the complexity of use of the EHR on clinicians' work process was highlighted by a provider below:

> *"But some people are slow with the computer input, you're learning a new program, we have a lot of IT issues here, so from the computer failing to I can't open this up, to how do you print this, where did you find that, blah, blah, blah, so it still was a huge learning curve with the same level of business, and so it was a disconnect there. So, that's what some of the resistance was from, so that meant that, yes, you're going to be at home working on charts late at night because you couldn't finish them all in the clinic". [Provider NP, Practice D]*

Loss of Control: In a few practices, respondents identified that providers were skeptical about the implementation and holding out on adoption due to a fear of loss of control of the patient care process. The PCMH model requires redistribution of tasks with the addition of a care

coordinator, and with several practices hiring additional staff, providers were required to relinquish some tasks or make changes to their patient care delivery process. Across some practices, providers were described as unwilling to let go of the reins. Some older providers felt like there was an intrusion in their way of providing care and they were now being told what to do for patients. This sense of loss of control is further exemplified in the following statements from respondents:

> *"[Have you seen or experienced resistance from staff or providers?] Some—and that was more of I think a control thing. They didn't want us putting our hands in the pot, per se, and were afraid we were going to try to take over where it was never that way." [Care Coordinator, Practice G]*
>
> *"One other challenge is taking some of the responsibilities from the provider and delegating some of those responsibilities to people who are knowledgeable to carry out the tasks – like your RNs, your Medical Assistants. That's hard, because you have providers who are used to carrying things out by themselves and getting them to relinquish that has been... yeah."- [Practice Manager, Practice C*]

Practice	A	B	C	D	E	F	G	H
Practice Type	Multi-specialty	Pediatrics	Pediatrics	Multispecialty, FQHC	Single Specialty	Multispecialty FQHC	Single Specialty	Multi-Specialty
Ownership	Hospital Owned	Free Standing	Free Standing	Free Standing	Free standing	Free Standing	Hospital Owned	Hospital Owned
Location	Urban	Urban	Urban	Rural	Urban	Rural	Rural	Urban
Size	Small	Medium	Large	Medium	Small	Medium	Small	Large
Patient Characteristics (Medicaid)	35%	50%	13%	59%	3%	15%	6%	16%
Level Round 1	1	1	1	1	1	1	1	3
Mid way assessment	2	3	1	2	3	3	1	3
Level Round 2	3	3	3	2	3	3	2	3
Results								
No. of reasons for passive adoption	3	3	5	4	1	3	4	2
No. of Strategies used for motivating Staff and Providers for Change	4	5	8	4	2	6	5	2

Table 7. Comparison of strategies for motivating staff and providers and reasons for passive adoption

4.4 Organizational Change Implementation Process

Once the adoption decision had been communicated to adopters, the practice leadership embarked on restructuring and redefining the model to fit their practice needs and restructuring the organization to fit the model. As implementation progressed, leaders across practices clarified the model as needed, correcting for any misunderstanding and undesired side effects in implementation. All practices instituted a team to lead the implementation consisting of provider and staff representatives. These teams developed strategies for implementation and disseminated information on the model across the practice.

4.4.1 **Restructuring and Routinizing**

All practices undertook some form of structural or process restructuring with the implementation of the model. The most common structural changes across practices were the addition of staff over the transformation period and technology changes such as changes to the EHR vendor, upgrade of the EHR or changes to the EHR functions to meet documentation needs.

This process of restructuring was clearly described by Practice F, where the PCMH Lead remarked that *"Our first initiative was to get the structure set up for the group that was going to focus on its (internal PCMH committee). It took a lot of effort/focus. Trying to break the process of transforming down into pieces so that we could take it one step at a time."*

The most common process changes across practices were the restructuring of staff and provider tasks, restructuring of teams, standardization of processes and changes to workflow.

4.4.1.1 **Structural Changes:**

1. *Hiring More staff:* As part of the implementation, all practices hired either temporary or full-time staff. Some of these hires were from within the organization while others hired external candidates. Some practices appointed RNs from within as care coordinators. In other practices, other staff were temporarily placed in the care coordinator role and later a part time or full-time care coordinator was hired depending on the availability of funds at the practice.

   The magnitude and spectrum of the hiring process also differed across practices. For example, one practice (B) started off with 5 providers but employed 12 providers by

the follow-up interviews. In another practice (G), a part time social worker was hired from the county health department, a PCMH and telemedicine coordinator (to cater for patients with mobility issues) and by the follow-up interviews, they had four care coordinators. The hiring process was sometimes described as a snowball with more support needed for new hires as described below:

"Transforming into a medical home, yes, we realized we needed more doctors. And then if we needed more doctors, we needed more staff. And if we needed more staff and more doctors, we need more supplies and more equipment and then we need these. Yes. It's kind of a snowball."[Provider PCMH Lead, Practice B]

The pace of the hiring process also differed across organizations. For example, in Practice C, a new care coordinator was hired first and after the leadership worked through an understanding of the role of a care coordinator, they hired an additional one. Unlike in other practices who were either hiring more staff or converting part time staff to full time, in Practice D, a care coordinator was hired at the beginning of transformation using funds from a grant that the practice had. By the end of the implementation period the grant had expired, the care coordinator left, and that role fell to everybody and nobody.

2. *Technological changes*: While all practices used EHR systems for documentation purposes, some practices started the transformation process with EHRs in place while others implemented these as part of the transformation. For example, in Practice D, the EHR vendor was changed at the beginning of the transformation to suit needs of data and improve the usability. Meanwhile in Practice H, a new EHR vendor was installed midway

through the implementation but this practice started the MMPP program at level three recognition.

4.4.1.2 **Process Changes**

1. *Restructuring Tasks*: across practices tasks were restructured between providers and staff such that administrative duties were transferred from providers to some staff who had a better fit for these tasks. Some practice leaders discovered that there was an imbalance between what providers were doing, versus what non-clinical staff were doing and then identified "*meaningless wasteful administrative"* tasks that took time away from clinical tasks. This resulted in staff being able to assign patients to the care coordinator without a provider's permission, such that patients could be seen, and their non-medical needs also addressed, thereby reducing workload on providers.

2. *Workflow changes:* Several respondents across practices highlighted that changes to workflow for patient care were made to meet the model requirements. Examples of changes instituted across practices include changes to clinic flow where patient visit summaries are given to patients by front desk task as opposed to providers, reducing disruptions in clinic flow. Changes were also seen in workflow in the form of changes to the structure of patient teams where staff worked with teams of providers, nurses and MAs, thus improving comradery and patient care.

4.4.2 **Moving providers and staff through the innovation decision process**

Strategies used in persuading passive adopters to active adoption of change implementation.

As implementation progressed in practices, leaders had to find ways to increase the adoption of the model and convert any resistance to active adoption of the model. Practices employed various strategies for persuasion in moving the adopters through the innovation decision process.

The main mode of persuasion across all practices was through increased communication about the model. Other strategies used by leaders included sharing performance results, reducing the complexity of implementation, peer to peer influence, and making changes to the leadership team for transformation. In total, nine persuasion strategies were identified across practices. These strategies can be broadly categorized as addressing the five main reasons for passive adoption – perceived complexity, difficulty giving up old habits, loss of control, lack of knowledge, and perceived workload. The highest number of strategies used by any practice was eight while the lowest number of strategies used was two. The practice with the highest number of intervention strategies also had the highest number of clearly identified reasons for passive resistance (see previous section). Table 8 provides an overview of the number of strategies used compared to the reasons identified for passive adoption.

Practice	A	B	C	D	E	F	G	H
Perception of the model/Implementation								
Perceived workload	✓	✓	✓	✓	✓	✓	✓	✓
Poor Knowledge and Uncertainty	✓	✓	✓	✓		✓	✓	✓
Reluctance to give up old habits	✓	✓	✓				✓	
Perceived complexity			✓	✓		✓		
Loss of Control			✓	✓			✓	
	3	**3**	**5**	**4**	**1**	**3**	**4**	**2**
Strategies for motivating Staff and Providers for Change								
Education to improve knowledge	✓	✓	✓	✓	✓	✓	✓	✓
Sharing Practice Performance Results	✓	✓	✓		✓		✓	
Reducing Complexity, Improving Usability		✓	✓	✓		✓	✓	
Peer Influence	✓		✓	✓		✓		
Co-creating with staff and providers	✓		✓	✓		✓		
Incentives for compliance		✓	✓					✓
Changing the messaging, selling the relative advantage			✓			✓	✓	
Story Telling		✓					✓	
Making Change Fun			✓			✓		
	4	**5**	**8**	**4**	**2**	**6**	**5**	**2**

Table 8. Strategies used to reduce Passive Adoption

4.4.2.1 **Addressing poor knowledge and uncertainty about the model**

Across all practices in the study, leaders and managers focused on addressing the barrier to knowledge and uncertainty about the model expressed by providers and staff. To achieve this, practices used the following strategies:

1. Education to improve knowledge: Leaders expressed that they found ways to educate the staff and providers about the model, what new changes that were being implemented and the rationale for the change. The care coordinator at one practice explained that the response to change among staff was due to the way the information about change was communicated in the practice, as a result staff are typically agreeable to implementing change. This is highlighted in the quote below:

> *"I think it's one of the reasons why, is because we don't just lay stuff out there and say, "Do this, just do it." We're not doing that. We say, okay, we're doing this and this is why, and so we're educating them as to why we're doing this. Okay, this is why we're going to get a hemoglobin A1C on everybody every three months. This is why we're going to get microalbumins on everybody once a year. This is why we're doing this. And they get it, so getting them to be part of the process really hasn't been a big deal." [Care Coordinator, Practice E]*

Leaders used formal and informal meetings, as well as repeating the same information over and over to make change stick. Although a lot of practices used meetings to provide education about change, a provider (Practice D) described that meetings were effective in providing information at the beginning but after a while became redundant, and aggravating to those who already understood the concept but had go through the motion

for those who were slower in uptake thus slowing potential progress by waiting for everyone to be carried along.

In some practices, education on the implementation of the PCMH model was provided through external sources. For example, as part of its education strategy, the leadership at Practice F, sent different staff to the collaborative meetings to boost enthusiasm and expose staff directly to the model. Practice leaders described that education about the model helped to improve buy in for implementation:

> *"I would like to say that it has been our efforts to educate the staff on PCMH that has helped obtain buy-in, but I'm not sure what has altered their perspective; maybe just time." [Practice Manager, Practice F]*
>
> *"Since they have a better understanding of what we are doing… they are now more engaged in what we are trying to do. Because change is a little different and people get apprehensive because they are not sure what they should be doing and why they are doing it. But now that they know I think the staff morale is much better." [Case Manager, Practice H]*

2. Sharing practice performance results: another strategy that leaders used to address the knowledge gap for increased adoption of the model was through sharing the progress data with providers and staff. Leaders shared the awards and recognition received as a result of the model. In addition, some leaders provided targeted feedback and counselling for laggards not achieving targets for implementation. In practices where this strategy was used, respondents shared that providers and staff were presented with patient reports so that they could compare their performance metrics with other providers. In one practice, the PCMH

recognition provided validation to the practice leaders and adopter on the legitimacy of the model and transformation process. One of the leaders described it this way:

"The recognition shows that we just didn't pull this out from somewhere, make it up ourselves; there's actually a body that accredits and recognizes. It also is a guideline for us to make sure that the practice does continue to practice in a PCMH way." [PCMH Lead, Practice G]

3. Changing the messaging and selling the relative advantage: In a few practices, some providers and staff began to view some tasks associated with the PCMH as a burden to complete with the only motivation for completing them being that they were required to do so. As a result, the leaders sought to reduce the association of the "PCMH" with negativity and focused the messaging for change on the advantages of the transformation efforts. Other leaders also sold the relative advantage of the model on work flow saying if we do more of this, we can do less of that. This is exemplified in the following statement:

"..... had felt like it had gotten to a point where the providers were saying to themselves, we have to do this because [PCMH Lead CCO] said that PCMH requires it, and PCMH became a thing. It became this bear that they didn't want to deal with. I know they hated hearing me. I could just see it in their faces. So, I've gotten away from that and I'm moving in the direction of we're doing this just because it's the right thing to do and we've had success with it so far." [PCMH Lead CCO, Practice F]

4. Story Telling: In very few practices, there was a clear description of the effect of sharing patient stories with providers in improving the adoption and perception of the PCMH model. Leaders in these practices shared that patient stories were beneficial in energizing providers for change. This is illustrated by the following comment:

   "In the beginning I think a lot of them were very skeptical, but then once they saw the success stories come out of it and we were able to prove how we can make a difference in how the team as a whole could make a difference in caring for patients it had a positive impact"[Care Coordinator, Practice G]

4.4.2.2 **Addressing Perceived Complexity**

1. Reducing Complexity, Improving Usability: To address perceived complexity leaders sought to ease the use of EHRs by providing more training on the EHR, changing the EHR vendor or making upgrades to the layout so that staff and providers could find it easier to use.

   "I think making it user-friendly to providers, most particularly, that have the most limited extra time to put into the program, I think has made it pretty easy from day one, as far as working efficiently with your nurse liaison and our clinical coordinators to make a referral and let them follow up with us and not require a lot of paperwork and a lot of documentation from the providers to again make them compliant. Acceptance would have not been very good, if that was required because of time limitations." [Provider 2, Practice G]

In one practice, in addition to making changes to the EHR to improve compliance with documentation, they placed printers in each exam room to boost staff morale and improve work flow.

4.4.2.3 **Encouraging adopters to give up old habits**

Some leaders tried to nudge the staff and providers towards change implementation. This was mainly done through monetary and non-monetary incentives attached to compliance.

1. Incentives for compliance: In some practices, managers used monetary incentives to try to move providers and staff towards active adoption of the model. These incentives were provided to motivate staff and providers to meet certain quality metrics. Overall, it seemed that monetary incentives were not perceived as effective in sustaining momentum for change and may have been more effective if at all among staff compared to providers. For example, in Practice H, the Medical Director was highly skeptical of the effectiveness of incentives as the practice staff only met only two of five metrics tied to incentives. The medical director further highlighted that issuing incentives may be problematic, because after a while, these monetary incentives would become the expectation of staff for doing their job.
2. Making change fun: Some practices included games and off-site team building activities to increase enthusiasm about transformation. In one practice, staff and providers were put into teams to compete for incentives. In another, the leadership created team building activities to get everyone invested in the transformation and took the staff and providers to a resort. In the one practice that used this strategy, the leadership

incorporated games in the intranet where staff across the practice could learn about the PCMH, the changes to the EHR and win gift cards if they got accompanying trivia questions right. The objective of this was to increase engagement. The Lead described the motivation for this below:

> *"Change is… everybody's afraid of it, so it's easing them in and say, "It's not that much different. If you do this, it ends up being better for everybody." [PCMH Lead, Practice C]*

In addition, because the providers felt burdened by their patients load and did not want to take time on the weekends to go to the collaborative meetings, the leadership tried to be creative in convincing them to go by creating jingles about the MLC and the PCMH, but it was very difficult to get providers to listen to these.

4.4.2.4 **Addressing Loss of Control**

In half of the practices in the study, leaders made attempts to address perceived loss of control primarily through peer influence and by making changes to the transformation team to include representation from all relevant departments. Addressing loss of control in some cases was closely associated with communicating clearly to providers that they were still in charge of patient care and the drivers of the program.

1. Co-creating with staff and providers (People support what they help create):

   In a few practices to improve buy in from staff and providers, leaders sought to include them in more decisions regarding the PCMH implementation. This was through more inclusion on the transformation team or in designing the EHR functions to increase

compliance. For example, in Practice C, the practice manager described that the implementation team was made up of the administrators and a provider champion initially but based on feedback from the MLC, they created a team that included the practice manager, a front desk representative, nurse managers from all the locations and care managers. They also included providers in the redesigning of the EMR to improve adoption and buy in.

2. Peer Influence: Non-provider respondent leaders remarked that it was important to have a provider's voice championing change as providers were more likely to respond to their peers. In improving peer influence and stirring providers towards adoption, some practices invited other providers or staff from practices that were implementing the PCMH model, to share their experiences in implementation. The following statement illustrates this:

> *"…. at the provider meetings they had a physician from an already-recognized PCMH come and speak to them about their experiences, and how it benefitted their practice. Just… seeing more patients, not working doubly as hard, and the monetary incentives. That was that…… Having people come and speak (from other practices) who are physicians on how they handled it worked. We had a lot of them go to the collaboratives to get more information." [PCMH Lead, Practice C]*

4.4.3 Innovative characteristics of the MMPP/PCMH model that were perceived as persuasive to staff and providers for adoption

The innovative characteristics of the PCMH model that were perceived to be associated with an increase in adoption by staff and providers across practices were the model's observability in terms of its benefits to patients and the compatibility of the model with existing practice in the practice.

The PCMH model's compatibility with practice was reported by respondents in most of the practices. Some practices reported that while improvements were being made as a result of transformation, there was not a clear distinction in the implementation period because of the model's compatibility with how the practice delivered care. The observability of the model referred to the benefits of the model and its visibility to patients and providers. In most practices, the outcomes of implementation were important in moving providers and staff towards active adoption.

4.5 Perceived Consequences of Adoption of the model.

Across practices, as implementation progressed over time, there were four main responses by staff and providers described by respondents. The adopters either increased their engagement with the model, had no change in response or perspective, had waves of resistance with each new mini implementation part or were indifferent with an attitude of "it is what it is".

In one practice, it was difficult for respondents to decipher staff and providers' perspective on the model in the final round of interviews, as there was an enormous overhaul of

all the electronic systems in the practice thus pushing PCMH to the background. One of the providers provided this anecdote:

> "for one thing there's been this enormous change over the last year, so PCMH has really gotten pushed to the back. ……. Again, I think it's been hard for me to judge here, because it's a combination. One, it is a more entrenched practice that I think just doesn't change as easily, but also has been forced to make this huge change [EHR]. So, I'm not sure how much the PCMH resonates with folks right now." [Provider, Practice H]

4.5.1 Perception of success

While respondents were asked about their perception of the success of the implementation, there was no clarity provided on the definition of success and thus it was difficult to compare the perception of success within and across practice respondents. Some respondents equated success to PCMH recognition, whilst others shared savings accrued and for others it was not clear what their response was based on.

Meanwhile in Practice B practice, the senior medical provider indicated that while they were successful, she was very frustrated with the lack of cost savings. She was disappointed because even though (in her own opinion) they had outperformed other practices, there were no cost savings received. Although most respondents within practices agreed that transformation to a PCMH was successful, there were some respondents who differed from the opinion of others within their practices.

The consequences of implementation of the model can be examined through the lens of patient effects, staff and provider effects and practice effects.

4.5.2 **Patient effects**

Across practices, the main consequences of the implementation of the model for patients was seen in perceived improved patient outcomes, increased patient engagement in care and improved patient satisfaction. By the end of the implementation, respondents across all practices reported improvements in targeted patient outcomes although not all practices could clearly attribute the patient outcomes solely to the PCMH implementation.

In terms of the effects on patient engagement, respondents across Practices A, E, G, and H reported that with increased follow up and care coordination, patients were taking ownership of their health and taking advantage of community resources. One of the provider respondents in practice A described that the care coordination had increased access for patients as the care coordinators serve as middlemen between providers, patients and their families, enabling patients to stay out of the ER. In practice G, the older Medicare population were described as appreciating the outreach from the care coordinators with an overall increase in compliance with follow-up visits with specialists, leading to reduced utilization of emergency room services.

Regarding patient outcomes, all the practices reported better performance in patient outcomes. Practices reported improvements in Diabetes Miletus (DM), reductions in readmissions and better obesity management. In Practice H, while some respondnents reported better patient outcomes, the PCMH lead and provider expressed that the changes in outcome metrics such as hospitalizations could have been achieved without the implementation off the PCMH model. Finally, in Practice E, although the care coordinator attributed the reduction in utilization by high utilizers, improved DM control, better BP control to the implementation of the model and to increased awareness of external resources for patients, the practice manager and

staff did not think there were any patient outcomes that could be accredited to the model since the practice had practiced as a medical home prior to implementation.

In Practice F respondents reported that there was an objective measurement of patient satisfaction which showed improvement in satisfaction with current appointment scheduling. In addition, the practice had received a lot of positive feedback from the hospital and surrounding practices.

4.5.3 **Provider and Staff Effects.**

Across practices the main consequence of the implementation with regards to providers and staff was increased communication and teamwork. Respondents noted that there was increased communication and teamwork in all practices except Practice G (in this practice, respondents described the providers and staff as an already tight knit group who worked well together with great team communication prior to implementation).

Improved teamwork and communication were expressed as an increased sense of responsibility on the team with staff feeling more integrated in the delivery of care. Respondents acknowledged that providers may be more cognizant of the contribution of the staff to patient care and as a result, working together has led to greater reliance on each other and comradery.

> *"I think people are now more cognizant that what they do is really a part of taking care of the patient. It's not just, "I pull the chart," or, "I get the lab." That's important because the patient needs that information. It's not just works to do just to do it: If we don't have this lab in the chart at the time of the visit, then how can we have continuity of care?" [Staff, Practice C]*

4.5.4 **Practice Effects**

Across practices, the most common practice consequences of the implementation were improved efficiency, financial rewards and legitimacy/recognition achieved. It was clear from the interviews across practices, that practices were able to use the fixed transformation payments and shared savings received to fund changes to their EHR systems, laboratory systems and in some cases, make changes to the physical structure of the practice.

Respondents reported an improved organizational efficiency and management of chronic disease patients as result of the implementation of the model. This was because the practices now mostly had the right people assigned to duties and were using data to drive improvement. In some practices, the standardization of processes helped to integrate the overlap between meeting the requirements for FQHC, and meaningful use at the federal level, i.e. report writing, tracking progress and using the EHR for these functions.

Regarding receiving shared cost savings, overall few respondents were aware of the cost savings received. As expected, practice managers and owners were more likely aware of any cost savings compared to other respondents. All practices reported financial benefits of the implementation (except in the FQHCs) with differing magnitudes. One owner (Practice E) was able to raise staff salaries and pay the care coordinator as result of the fixed payments available through the MMPP in addition to the cost savings received from the insurance companies. In another practice (C), the financial rewards were in the form of cost savings and higher reimbursement rates as a result of a decline in number of its patients showing up at the ED. As a result of the financial rewards, this practice was able to afford to employ more staff. In another practice (B), the practice manager reported that although the practice did not receive cost savings

the end of the first year (mostly due to the rising costs of medical care), without the PCMH program, the practice financial performance would have been in the red. In that time, they had a 24% decrease in expected costs, but when they deducted the medical home payments from that, the practice broke even.

> *"It just made us able to breathe a little easier and be able to do these things and not feel like where are we going to get the money to do this. So, that did help there." [Practice Manager, Practice B]*

In a few practices, respondents reported that as a result of the model the practice had gained recognition, or legitimacy among patients in the community. In Practice F, the Lead care coordinator highlighted that implementation of the model has affected the type of advertising the practice does- they now talk about the patient being the center of their healthcare and being part of the decision-making processes and place the NCQA logo on its advertising.

> *"There's definitely a benefit to get the NCQA logo. We have that insignia on all the advertising. I think that may not be recognized as much as the actual transformation of our practice. …….. The image of our practice is based on what we do every day, how our employees treat patients, whether they are in [Practice Name] and then also out in the community. We've been very active in the community as part of this transformation and people are starting to recognize that and notice us" [Lead CCO Practice F]*

Across other practices, respondents highlighted the PCMH recognition sets them apart from other non-recognized practices and signals the quality of the practice, thus increasing word of mouth referrals. In addition, awards and certifications were perceived to be a sign to the community of the innovations the practice is participating in.

Discussion

5.1 The Organizational Decision-Making Process Across Practices: Leadership Influences and Motivations for Adoption.

5.1.1 All Practices Used the Authoritarian System of Decision Making

The first research question sought to explore the decision-making process at the organizational level for practices implementing the PCMH model. It identified the motivation of practices in adopting the model and what processes where involved in the decision to adopt.

Decision making could be a collective or authoritative process and may affect the implementation of the adopted innovation if there is no buy in from potential adopters. It is beneficial if management and adopters buy into the process. Given the nature of healthcare and critical role of providers, this may have a significant effect which could be modified by the type and ownership of the practice, structure of employment for providers. Providers who are employed or in a large healthcare system may be far removed from decision making and may have less incentives to get involved in improvement efforts. The decision-making culture of the environment may be critical in determining how implementation is carried and consequently affect the ownership of the adoption process.

The processes involved in the decision to adopt was not clearly identified by most respondents. However, it was clear that across all the practices in the study the decision was made at the management or ownership level.

Given this perspective of authoritarian decision making, the nature of the practices in the study deserves more attention. There are several factors that influence the decision-making

structure within organizations. These include the size of the organization, management structure (centralization versus decentralization), ownership and leadership motivation. In large organizations, due to the need to maintain efficiency in complexity as a result of size, more documentation is required, more decentralization for within department decisions but with organization wide decisions made at a higher management level[121,122]. On the other hand, smaller organizations have a more fluid decision-making process that is less bureaucratic, and most senior managers can influence decisions based on their personal values which encourages innovation and participation of staff in the organization[123].

As expected, none of the practices where the decision process could be articulated by respondents was a large practice i.e. practices A, B, E and G (see Table 3 for practice characteristics). This could have also been because of the nature of the respondents who were interviewed such that even managers who were interviewed were more likely to be middle level managers in large practices compared to the owner or senior level management in small and medium sized practices. Being a small practice under the ownership of one physician, we find that the decision-making process is in true authoritarian fashion, in the sense that every other person in the practice is employed by the owner, and there is only one level of decision making such that the owner is involved in everything. Thus, the decision to implement the PCMH model and perhaps any other change idea would be influenced by the owner's personal motivations and preferences for practice as described by this statement: *"I'm the only champion. The care manager takes on the work, but everything is driven by what I want." [Provider Owner, Practice E].* This finding is in line with research on practice transformation by Wise et al[124] that demonstrated that in independent physician owned practices, the decision to transform to a

PCMH was solely the responsibility of the physician owner as it was their personal business enterprise. As a result, irrespective of a desire to implement change, staff were unable to learn more about the PCMH model or implement it until the decision was made by the owner.

While the original decision to adopt the model in all practices was authoritative, we see that in each practice, there was a gradual shift from authoritative to a more facilitative approach in the implementation of change. For example, in practice A, the decision to adopt the model was made without the staff within the practice. Shortly after, a redesign team was formed to lead the implementation. As changes were being rolled out, some administrative staff started questioning the changes especially because the administrative staff were not involved in the redesign team. As a result, the practice leadership became more inclusive and had several meetings with frontline staff and providers to identify their pain points and targets for implementation. They were then walked through the model and demonstrations of the use of the EHR as part of the implementation. These efforts are in line with lessons and recommendations from PCMH demonstrations that highlight the need for communication about the change to ensure motivation of frontline workers [48].

Another way the decision to adopt was made was through finding the right fit and examination of the process in other practices to identify the feasibility of implementation of the model. The implications of this meant that practices had examples to follow for successful implementation of the model. This process then involved more middle level managers such as the PCMH leads and some practice managers who were part of the final decision on deciding what type of demonstration to be a part of and how the implementation would be rolled out in the practice. Involvement of more middle level management in the decision-making process has

been shown to be associated with success in overcoming challenges in complex redesign of health care systems that involves change across multiple levels within health care practices[125].

5.1.2 Transactional versus transformational leadership styles?

It is important to understand the role of the style of leadership in PCMH transformation especially regarding sustainability. Further examination of the leadership style may produce categories of leadership exhibited in the various practices. Positive leadership has been shown to be associated with the organizational climate, and is important for the adoption of innovations in service organizations[70,126,127] and thus leadership values are critical in understanding the implementation from an organizational perspective. In addition, leadership values are critical in achieving quality of care in health care settings[128].

Two main types of leadership styles have been explored in the literature. These are transactional and transformational leaderships styles. Transformational leadership is described as charismatic leadership which inspires and motivates followers[129,130]. It can be seen especially when leaders have close functional proximity to those they lead[131,132]. On the other hand, transactional leadership is a described as a type of leadership style whereby there is an exchange between leaders and followers such that leaders reward followers for achieving goals set. While these two styles of leadership are important, transactional leadership is useful in healthcare practices or other settings where adherence to standards is vital[129,133,134]. Transformational leadership on the other hand is crucial in getting staff to go beyond expectations through intrinsic motivation. As a result, these styles of leadership may improve adoption through different

mechanisms. Transformational leadership would improve attitudes towards an innovation through increasing trust while transactional leadership would achieve this through reinforcement and incentives for adoption[135].

From the practices in this study, we see transformational leadership demonstrated clearly in practice E, a small practice, where the leader is described as involved in everything. The single ownership means that the leader is more readily accessible to the front-line staff. The implementation activities are dictated by the owner who is described as very thorough and the heart and soul of the practice.

The structure of the PCMH is incentive driven. Given its focus on achieving standards that will culminate in a recognition status, it is possible that it lends itself to a transactional form of leadership style. Transformational leadership may play a role in getting adopters motivated to reach the organizational goals irrespective of the PCMH target, but transactional style of leadership may be used to keep the practice on track with the PCMH standards. Given the frequency of change in healthcare, transactional leadership styles as utilized by some leaders in this study helps to improve trust by demonstrating the execution of the model[136]. Providing clarity, also improves performance especially given the multifaceted nature of the model requirements. Transactional leadership may be difficult to isolate in PCMH model implementation given that the standards are clearly outlined. however, the leadership still has a role in making these standards clear to adopters in the practice. For example, in Practice D, the leadership demonstrated transactional change by providing clarity for the implementation to the frontline staff as highlighted below:

"[Speaking about strategies used] I don't know if "change" is the right word. I feel like a lot of the stuff we really were doing, and we had a handle on, but it put it in black and white for everybody to see". [Staff, Practice D]

As Implementation progresses, the transformational leadership style may also be used to reenergize and motivate frontline providers to avoid peaking in transformation efforts especially when challenges arise. The practice sizes and proximity of decision maker to the respondents may have played a role in the description of the leadership style available, such that transactional leadership may appear to be used due to the layers of power involved in the management of the practices.

5.1.3 Practices have intrinsic and extrinsic motivations

In line with research on motivation for practice transformation, we find that the main motivations for PCMH transformation are both intrinsic and extrinsic. The intrinsic motivations were primarily to improve the quality of care provided and patient outcomes, and the compatibility of the model to the practice values. The extrinsic motivators were to primarily to achieve financial rewards, align with future policy and the need to achieve legitimacy[137]. This is consistent with other studies that highlight the practice motivations for obtaining the NCQA recognition such as consistency with organizational values, improve patient experience take and to take advantage of local and regional financial incentives[138,139].

Fundamentally, healthcare facilitates want to improve their outcomes of care and the motivation to achieve shared savings was connected to their desire to deliver on their mandate. Irrespective of where practices were located, their size or specialty, they all wanted to use shared savings to improve efficiency. In addition, the MMPP collaboration provided a structured way of

achieving the PCMH recognition. In addition to improving outcomes and achieving desired savings, some practices also desired to achieve current and future policy alignment and legitimacy. Examining closely practice motivation and context, I did not find a clear pattern in the relationship between practice size, location, or patients served in the top four motivations for implementation identified by practices.

The identification of compatibility of the model with practice structure is in line with the DOI theory and the characteristics of an innovation that increase adoption. For example, some respondents across practices noted that the model is what they have always practiced, and thus the adoption did not feel like a completely new idea. This demonstrates that the compatibility of an innovation with an organization's operations influences the decision making regarding adoption[71].

Given that the PCMH model has been rapidly expanding across the US, from 18 states in 2009 to 44 states in 2013 serving almost 21 million patients[50] and at the time of the implementation of the MMPP, there were already over 7,000 recognized practices[28] and available research on the benefits of the model, the practices in the sample can be considered as late adopters of the model. In line with research by Nord and Tucker[74], It was clear that if some of these practices had the resources needed, they would have adopted the model much earlier than they did. Additionally, we see that a few practices were motivated by legitimacy and recognition that the NCQA logo would provide. This was clearly articulated in two practices (F and G), and mildly in practice A. Practices F and G are similar in context in that they are in rural areas and have similar numbers of providers. On the other hand, we find that in Practice H, a large practice affiliated with a large hospital, one of the staff commented that " *I don't really think*

it's that publicly known that we're a PCMH, so I think it's just more of an internal situation, but we are constantly reminded that we're part of this program". Given its size, this might be an indication that the PCMH recognition may confer no additional legitimacy for the practice to its patients.

Based on this, our findings differ from the Westphal et al.'s perspective on why organizations would implement quality improvement programs. These practices are motivated by the economic and efficiency gains of the model and the social gain. Thus, in line with Kennedy and Fiss[140] we find that motivation toward economic and social gain is not period dependent or mutually exclusive. These late adopters are also concerned about economic gains. At the same time, we recognize that the expansion of the PCMH model across the United States may have led to increased pressure of adoption by practices and physician practices in order to appear legitimate. That is, the increased marketing of the model, and patient awareness of model, combined with the linkage of the PCMH model to financial reimbursements has created additional pressure for adoption by practices[68,141].

5.2 How Do Staff and Providers Respond to The PCMH Model Over Time: Perceptions of Change and Reasons for Passive Adoption

The second aim of this dissertation sought to explore the organizational change implementation process and responses by frontline providers over time. It examined if the perceptions of change followed the stage ordered process of the DOI theory, the reasons for active or passive adoption of the model and the strategies used by management to improve the

overall adoption of the model. Overall the key findings for the second research aim were that the reaction to the model was mostly mixed among adopters, and the adoption process does not occur in a clear and simple linear stage ordered process in an organization. Rather, this happens through differing pathways involving numerous interactions between the organizational and individual decision processes. Based on these findings a new framework was developed (Figure 3). The findings around the perspective to change is in line with previous research that shows that most staff response to organizational change involves some ambivalence in terms of negative and positive responses to change[142].

5.2.1 Organizational and Individual factors moderate adopter perceptions of change

There are various factors that may affect the adopter's response to change implementation. These include organizational factors and individual level factors. The organizational factors include leadership characteristics and attitudes to change, the communication of the change, and the organizational culture and teamwork and the inclusion of adopters in the decision-making process. The individual factors include the adopter's emotions and cognitions, personal characteristics and the nature of their role in the organsiation[69,70,143,144]. In line with Frambach and Schillewaerts[70] study on organizational innovation adoption, we find that this is true for the practices involved in the study where organizational factors indeed influence the attitudes of the staff and providers to change.

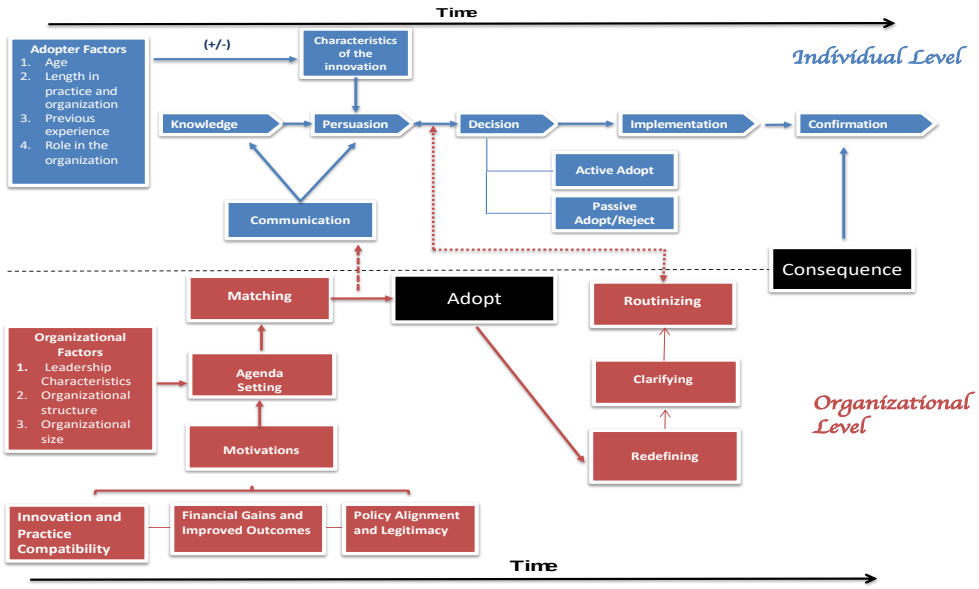

Figure 3. Modified Conceptual Framework and Study Aims

5.2.2 Organizational Culture and Teamwork

The organizational climate is an important moderator of change implementation success. Overall, I found that within and across practices the perceived response to change was mostly mixed except in a small practice where the perceived response was mostly positive. In this practice, the respondents described a lot of teamwork and willingness to work together to succeed at the change implementation. The staff here were described as feeling free to make suggestions for improvements to the owner as she presents herself as part of the team without entitlement, this made the staff feel more at ease. This participatory form of leadership may contribute to the positive response towards change seen at the practice and has been shown in research to help to motivate adopters towards performance and overcoming resistance[145,146].

Similarly, across several practices with mostly mixed responses to change, respondents emphasized that teamwork and leadership factors also played a key role in the positive response of some adopters to change. For example, in practice A, one staff described teamwork at the practice:

In my specific office we have a lot of teamwork. We work together. If someone is falling behind, we help. We all pitch in whatever we can do to make sure that everything is done and taken care of the best of what we can do. - [Staff, Practice A]

Along the same lines, another organizational factor that may have mediated the response to change is the size of the practice. As one respondent in this practice described "*Since we are a small office, we work so closely together. So, there's always communication going on.*"

5.2.3 **Leadership Attitudes to change**

Attitudes to change of adopters within a practice can also be affected by the leadership attitudes to change. If widespread cynicism is present in a practice, it can deter any progress in change implementation[147]. A positive leadership attitude improves the response to a change model. We see this clearly in the statement below:

"They are both strong leaders and are very positive about it, I feel like it has helped me be positive about it, walking into something not knowing what I was going to do. ... They really want this to work in our practice." [PCMH Lead, Practice B]

Positive attitudes to change have been found to be associated with employee participation in decision making[147]. We find this to be true in certain practices, where the strategy

comprised the inclusion of front-line staff in decision making regarding the implementation of the model.

5.2.4 Practice Age

Other organizational factors that may influence the response to change include the age of the practice, such that the older the practice is the more difficult it is to implement change. In a new organization which may less rigid and striving to establish itself in terms of norms, change implementation of change may be easier, and received well compared to a more established organization. We find this exhibited in practice A, where at the time of implementation of the model, the practice was relatively new, and one respondent described the effect of this below:

> *"We were doing a lot of what is required already, because [provider name]] and [provider name] are very new. We were able to start our practice small and be more individualized from the start. As the practice grew, this was all able to happen. We were able to see a need: this is getting out of hand; we need a case manager. The timing was perfect. It wasn't as much of a transition for us because we were so new (only 3 years old) so we weren't set in our ways." – [Office Assistant Practice A]*

5.2.5 Individual Adopter Characteristics

Innovativeness*:* Taking a closer look at the potential individual factors within practices that influenced the perception of the model, we find that in line with the DOI theory, the innovativeness and perception to change of the individual adopters within a practice matter. For example, In Practice G, the two providers are described as *"very open to new things that are good for their patients. They are a tight-knit group who work very well together."*

Length of time in practice*:* Another individual factor that explains the perception of the model and response to change is the amount of time spent in an organization. New hires may be more likely to be more invested in the model and have a positive response to the change, since this new model may be what they know about the organization. Some of the passivity towards the implementation of the model was found among providers who had been part of the practice for a long time or have been in medical practice for a longer time and used to practicing a certain way.

Previous experience: As part of the implementation, a lot of practices hired new staff. Some of these staff and providers came from practices that were very different from the PCMH model and this may have affected their perception of the model.

> *"I think their background has played a role; for instance, physicians who came from the emergency department where they don't have any sort of PCMH model have shown the most resistance with the program." [Practice Manager, Practice F]*

5.2.6 Effect of the model on the adopter's role

Another individual level moderator of the perception of the model is the degree to which the change implementation affects the adopter. For example, for some staff in practice G the model was a welcome change as, the PCMH model led to a restructuring that reduced the burden of making repeated phone calls and ultimately the number non- compliant patients that they had to follow up with as some of these tasks were shifted to care managers. Similarly, in practice C, front desk staff perceived the implementation positively as changes had less implications for their work compared to clinical staff. In this sense, in line with the DOI theory, the perception of the

model is modified by the degree of advantage it confers on the adopter that is the reduction perceived reduction of workload. Along the same lines, several staff in practices were initially very excited about the change model as it included the addition of staff, providers and resources to make it easier in achieving their targets for patient care.

Providers may have been more accepting of the model implementation because of the effect of the model on their patient outcomes of care. In this sense their perception of the model was based on relative advantage that the model offered to the core roles in the practice compared to the status quo.

> *"I think providers see the necessity of it. They're coming from a different perspective: this is their license and patients they are providing care to. I think it's a help to them. We're watching the things they don't have time to watch. So, I have a feeling that yes, it's more work but they think it's beneficial and it needs to be done." [Practice Manger, Practice B]*

5.3 Reasons for passive adoption

For the purpose of this study, the term passive adoption is used instead of resistance because there is no clear demonstration of outright resistance or refusal to engage in any part of the implementation by adopters across practices. Rather, there are varying reasons for which the adopters "drag their feet" or partially engage with the model implementation. In addition, some researchers have been critical of the term resistance as it may dismiss valid concerns that staff raise related to the change implementation[148,149]. From our findings most of the reasons for

passive adoption are concerns about the details of the implementation and not a rejection of the change idea or rationale behind that change model.

The main reasons for passive adoption of the model from our study were due to the perceived workload, poor knowledge and understanding of the model, reluctance to give up old habits, fear of a loss of control and the perceived complexity of the model. A study conducted by Wise et al[124] in 2011 on 16 primary care practices who were part of a state initiative for the transformation of the practices to PCMH models found similar themes. The study found that generational differences in receptivity for change and advances in information technology, the potential for the PCMH model to undermine the status or power of some individuals within the practice, the time demands of the PCMH implementation, and difficulty understanding the PCMH domains and associated tasks were related to set backs in implementation of the model[124].

The PCMH model requires a change in the role and distribution of tasks and thus every member of the team has to be willing to change to ensure a successful transformation[150]. The lack of participation by providers who do not want to let go of ways of delivering care can affect their immediate staff who are then unable to comply with the transformation even if the whole practice is transforming. This could also lead to the unequal distribution of tasks to make up for lack of provider participation in the transformation process. This reconfiguring of roles can lead to concerns about taking on new responsibilities or releasing the reins to others to take them up[151]. Studies have found that the role change involved in the implementation of the model have been particularly difficult for providers who are now required to delegate some of their task to Medical Assistants and Care Managers[150,152].

The National Demonstration Project (NDP) found that in particular this role change has been particularly difficult for providers who felt that their role as provider was building trust with their patients and "sharing that relationship with other practice staff members was, for many, a significant challenge to their identity as physicians"[153]. Some of the push back in terms of provider roles may also be from a lack of trust in the ability of other members of the team to deliver the same quality of care. This has been expressed in physician resistance to the increasing roles of Nurse practitioners and care coordinators in primary care delivery[154,155].

The National Demonstration Project demonstration project also found similar results[48] in complexity. The perceived complexity resulting in passive adoption is not without cause. The technology components of the PCMH model required ongoing problem solving as some of the EHRs were not equipped to meet the reporting requirements of achieving recognition. This frustration with the EHR system was expressed by a provider this way:

> *"I would be much [happier] to have my paper charts back – just throw that thing out the window. I'm not that computer literate. It's a machine, it's programmed, but I swear we have goblins." [Provider, Practice G]*

While the MMPP was valuable to practices in this study in reducing the time and effort involved in applying for PCMH certification, the process still takes a considerable amount of time. The finding of perceived increased workload as a cause of passive adoption makes sense in the light of available literature on frontline perspectives of the implementation of the model. A study evaluating the transformation of several FQHCs to PCMHs found that the time taken to apply for the PCMH took away time from the implementation of the model. In addition, this study also found that providers in PCMH demonstration practices reported that there was an associated

increased stress, reduction in professional satisfaction, and the recognition process led to increased demand on their time, and less time spent on patients with complex needs[47].

The perceived increase work load may be due to a perception of the interference of the change with a provider's work flow. In addition these changes may be perceived as suggesting that a provider is not doing the right thing or is perhaps make them look incompetent[156]. In addition, a lack of clear communication and understanding around the need for change can lead to passivity. This was clearly demonstrated across several practices where the leadership initially only selected a few people to inform about the change and so some staff were hesitant because they did not know why the changes were being made.

5.4 Improving adoption: Strategies used by leaders to improve active adoption

The study set out to identify how managers and leaders respond to the perspectives of adopters on the implementation of change. The strategies implemented can be classified broadly into communication, training and education on the change, increased staff involvement in decision making, and use of incentives to nudge adopters towards change. These findings are in line with the human resource management practices that lead to successful change implementation[157]. Just like in similar studies, executive buy in on the model was important, in addition education and communication on the model to provide clarity on the different moving pieces was a key facilitator of improved adoption[47].

Communication is a key strategy for improving adoption. When adopters perceive that they have been duly informed and received quality communication regarding change, they become more open to receiving the proposed change[158]. The framing of the adoption message is a strategy with merit in the literature. Framing the message of adoption as an opportunity or threat influences the degree to which an individual adopts an innovation[140]. Some practice leaders employed a positive framing of the message for implementation (focusing on the benefits of the model to the practice) which yielded an improved response from adopters as opposed to communicating "this is what we have to do". The results also show that story is an effective way of communicating the results of implementation. This is in line with research that shows that using narrative communication such as stories is useful in overcoming resistance and helping the listener to communicate and develop a relatedness to the actors within the story[159,160].

In line with other studies on PCMH transformation, the leaders of practices in this study were successful in using feedback on performance to improve motivation for change, reduce skepticism and demonstrate the benefits of the model to patient outcomes[124,150,153,161].

In addition, research shows that in cases of forced adoption i.e. where staff are not involved in the decision to adopt, mangers must facilitate trials, develop employee competence and encourage peer interactions. Peer interactions facilitate the sharing of knowledge and user experiences among adopters[77]. This was demonstrated in practice D where those who understood the PCMH concept and change implementation process, were encouraged to be champions among their peers. Across several practices, leaders also invited staff from other practices to share their experience of implementation with the adopting staff.

Across most of the practices, the leaders also focused on getting buy in particularly from the providers. This is important due to the hierarchical nature and power dynamics in health care. So, ensuring that there is buy in from providers may increase the potential for adoption as a staff in practice B expressed *"Everybody respects the doctors and they'll do whatever you tell them to do".*

Although only a few practices tried to use incentives to motivate staff and providers, our findings are consistent with literature that shows that intrinsic motivations are likely to be more effective compared to extrinsic motivations such as financial rewards[162–164]. This idea is articulated clearly by a respondent below:

> *"But interestingly, I think that as far as morale, you asked this question before, the money is great, but it isn't fundamental to, I think, the staff satisfaction. I think more fundamental is satisfaction with what they're doing, what they're accomplishing. They appreciate a couple hundred dollars coming in, but unless that keeps happening-- And if it keeps happening then it becomes oh, that's just part of my pay, if it doesn't keep happening it becomes almost a dissatisfier, or it can be. So, the pay piece is actually pretty tricky about what you do with that. I think more fundamental to satisfaction is feeling like you're really taking care of people well, and that's what really motivates them." [Provider, Practice G]*

The incentives applied were positive incentives to provide bonuses to teams that achieve certain targets within the implementation of change. While research shows that team incentives such as the shared savings tend to work better than individual incentives such as pay for performance, behavior research shows that financial penalties work better[54]. This is based on the prospect theory that shows that the pain of losing is more powerful than the pleasure of

winning[165]. According to the respondents, the individual incentives that mangers tried to use to motivate staff and providers towards active adoption, were not effective.

Multiple Strategies for Success*:* Regarding the use of multiple strategies for improving adoption of change, we find that practices who used multiple tactics were more likely to achieve level three recognition status especially if this was not achieved by the midpoint of the implementation of the MMPP period. This in line with literature that has found that the for even simple change implementation, the likelihood for success is increased significantly if multiple strategies are used compared to a few stratgeies[166]. It also appeared that the use of multiple strategies was in response to the number of barriers that practices had to overcome to increase active adoption by providers and staff. By the midpoint period of the implementation, only three (Practices C, D and G) of the eight practices were still at PCMH level 1. Practice Gs performance may be due to its late start according to respondents at the practice. Out of all these practices, practice C implemented the highest number of strategies to improve adoption. The leaders here used all the strategies identified in other practices except story telling/narratives. This may have contributed in the achievement of PCMH level 3, one of the goals at the end of the implementation period.

5.3 What does success look like?

All practices report perceived improvements in patient care, outcomes and efficiency. The degree of congruence varied across respondents in practices.

As expected, throughout the practices, the definition of successful transformation to a PCMH was difficult to define. This was illustrated clearly by a provider in Practice G who noted

that *"we don't know what a successful patient-centered medical home does or is or what the results are".* The perceptions differed in terms of outcomes (i.e. patient outcomes, recognitions, cost savings) used to define success and the degree of success based on respondent expectations. For example, in practice D, all the respondents thought that the implementation was a success except the PCMH Lead who thought the practice was only partially successful because the focus of implementation had been on the clinical side and not enough on the administrative side /staff of the practice. These differences in perceived success ranging from quality of the change and outcomes to quantification and pace, is in line with organizational research that shows that the judgment of success for change is dependent on who is making the assessment[167]. Thus, while the practices may be achieving certification, judgement of success will vary between PCMH leaders and non- PCMH leaders, and between providers and staff. For example, in Practice A, one of the providers expressed that the practice started on the right track but lost its steam and should have been more successful than what it is. On the other hand, the new Practice manager expressed that the practice had been successful with transformation had done a good job of meeting the standards that it targeted, while exceeding some targets.

Overall the reported outcomes are consistent with other studies on PCMH outcomes that find improvements in patient adherence, access to preventive care and follow up, improved care processes, chronic disease outcomes and increased effectiveness of practice teams[28,168].

5.4 Implications for Policy and Future Research

Overall, this study will contribute to understanding the multidimensionality of change in a healthcare organization. Implementation of policy change in healthcare occurs on two levels: the adoption by organizational leaders, and the adoption by individuals within those

organizations. Practice leaders are motivated by different reasons based on their context and organizational aims. Knowing these reasons would provide more insight to the NCQA and other policy makers in reaching more practice leaders to increase adoption of the PCMH model, while ensuring minimal dropout rates for those practices already recognized. Understanding what types of practices are likely to adopt the PCMH model for legitimacy concerns is important. If practices which are small, private, single owned, or located in rural areas are more likely to adopt the model for legitimacy reasons, then supporting the economic implications for this adoption is crucial in ensuring sustainability.

We know that physicians and staff willingness to get involved in change processes is a key ingredient of successful transformation of a practice[169]. We also know that organizational readiness differs from physician readiness to change in that while managers can mandate change in their practices, physicians may remain resistant to a change idea even while the practice as a whole undergoes implementation[156]. This study discussed various reasons for passive adoption by staff and providers within practices. I recognize that there may have been reasons for passive adoption not identified by this study. While management may have clear motivations and rationale from adopting the model, frontline staff and providers may have a different perspective of the model. If incongruence in perceptions of the change model persists over time, the practices may become less effective in implementation, decreasing commitment from staff and may eventually drop out of the certification process[29].

Furthermore, this study highlights that while providers may have positive attitudes toward change, and agree with the rational for change, that may not be translated to a decision to implement the change on an individual level[69]. These findings are useful to managers and

policy makers. While there is a plethora of literature on leadership, this study adds to the literature by following the practices over time, outlining the response of managers to passive adoption and the response to these strategies. Thus, highlighting the importance of staff and provider engagement in PCMH transformation. Managers must identify the barriers to adoption within their practices, understanding that these barriers may change from one individual to the next. Also, identifying why frontline staff and providers may be hesitant to adopt the model can lead to the design of effective strategies to increase adoption. This is especially important for organizations that have begun the PCMH journey. There is no one size fits all in terms of strategies within and across practices for change. Regarding providers willingness to change, we do not know enough about how much compromise regarding their autonomous role that providers are willing to make in order to achieve improved patient outcomes. This is an area where more research is needed.

The practices in the study are almost identical in their motivations for change. The motivations identified did not provide additional insights on the outcomes achieved by these practices. In addition, the practices in this study were mostly already practicing closely to the PCMH model or had a desire to improve. As a result, this may not shed more light on the motivations that practices who are somewhat different from the ones in this study may have in choosing or not choosing the PCMH model. Regarding what practice styles might be important in the successful transformation to PCMH, further study is also required.

Temporality is an important feature of change as demonstrated in the study. As participants got more exposed to the components of the PCMH recognition over time, and interacted through social networks across the practice, their perceptions changed, reflecting how

they move through the innovative decision plane. Further study will be needed to identify how long change implementation should take place before a judgement call is made on its success or failure given that interactions between providers, staff and patients cannot be scripted and play a role in determining the pace of change.

5.5 Strengths and Limitations

The strength of this study lies in the combination of data from two time periods within the implementation time frame to provide insight and depth into the context of the practices in the study and how change implementation progresses within each practice. The use of a diverse mix of cases provides more insight into the outcomes across practices representative of real-world situations where practices differ by important characteristics. The objective of the research was not to generalize to the universe of practices but using the case findings to refine and extend the understanding of the factors that affect implementation and yield to successful PCMH quality improvement outcomes. Due to the similarities and difference of the cases selected, they were well suited for assessing the influence of contextual elements that affect outcome attainment.

The study has certain limitations related to the nature of secondary qualitative analysis, inherent nature of the study design, the conceptual framework used and limitations of qualitative research methodology.

The use of the DOI theory has some limitations. The theory did not originate in public health and thus was not originally developed to examine adoption of health innovations in organizations. In addition, it does not examine the individual's resources or social support outside of the organization that may determine behavior within the organization and response to

innovation. Regarding the data, using secondary data for this study has its drawbacks. The data quality could not be verified, and participants were no longer available to clarify issues that were difficult to interpret. In addition, due to the IRB agreement for the original project the audio recordings of interviews were no longer available. Another limitation was related to the demonstration timeline for the project being studied. The data did not capture the post-implementation period to determine if the implementation of the PCMH model continued with the termination of the MMPP. The time period also may not demonstrate the full effects of the PCMH implementation as some consequences may trail behind. Finally, limitations in qualitative research methodology and researcher bias may influence the interpretation of findings, compounded with the sheer volume of data involved, making research time consuming and increasing difficulty of establishing rigor .

To reduce the effect of these limitations, I took the following measures. I read through all the cases to ensure that the interview questions and responses could be applied to my research aim. Next, I commenced an inductive approach to coding to ensure that the conceptual framework was not forced to fit the data and rather the findings were in line with what the respondents were communicating. The coding scheme was cross checked by my thesis advisor and qualitative research colleague. To reduce the researcher bias during analysis and interpretation of only what was available in the transcripts, I identified my assumptions and hypothesis, I relied on interviews, and other researchers who were part of the primary study or the quantitative analysis of the study and dropped interpretations completely where clarification could not be obtained.

Another limitation of qualitative approach may be critiques of its generalizability. However, this multi-site case study seeks to achieve transferability and provides an advantage compared to a single site study by demonstrating the experience of staff and consequence in more than one setting thus providing a broader understanding about organizational change. The advantage of using the MMPP project evaluation sites lies in the design of the intervention. The practices included in this study aim to reflect the general types of practices seen across the United States, increasing the possibility of external validity of findings to states outside of Maryland.

The study was unable to identify a temporal sequence of the change in perceptions of adopters across the practices implementing the model. However, it was still able to identify what the perceptions of change were and the response of the leadership to increase adoption. The timing of the implementation of the strategy was not primary question in the interviews and thus due to the secondary data analysis structure of the study, it was difficult to consistently isolate the early versus late strategies were used across practices. It was also difficult to identify the intensity used to implement successful strategies. This may have provided more insight to how practices implemented the strategies based on their context, peculiar challenges and what intensity of implementation would yield successful outcomes.

References

1. Wilensky GR. The First Hundred Days for Health Care. *N Engl J Med*. 2017;376(25):2407-2409. doi:10.1056/NEJMp1614965

2. Bock RW, Paulus RA. Immersion Day — Transforming Governance and Policy by Putting on Scrubs. *N Engl J Med*. 2016;374(13):1201-1203. doi:10.1056/NEJMp1600068

3. New Report Shows Regulatory Burden Overwhelming Providers, Diverting Clinicians From Patient Care | AHA. American Hospital Association. https://www.aha.org/press-releases/2017-10-25-new-report-shows-regulatory-burden-overwhelming-providers-diverting. Accessed March 6, 2018.

4. Hannan MT, Freeman J. Structural Inertia and Organizational Change. *Am Sociol Rev*. 1984;49(2):149-164. doi:10.2307/2095567

5. Irvine J. Fail to Scale: Why Great Ideas In Healthcare Don't Thrive Everywhere | THCB. http://thehealthcareblog.com/blog/2016/09/29/fail-to-scale-why-great-ideas-in-healthcare-dont-thrive-everywhere/. Accessed April 18, 2018.

6. Is Public Policy Changing The Practice of Medicine? Health Affairs. https://www.healthaffairs.org/do/10.1377/hblog20140521.039122/full/. Accessed March 6, 2018.

7. MMPP_Evaluation_Final_Report_073115.pdf. http://mhcc.maryland.gov/pcmh/documents/MMPP_Evaluation_Final_Report_073115.pdf. Accessed March 27, 2018.

8. 2010_namcs_web_tables.pdf. https://www.cdc.gov/nchs/data/ahcd/namcs_summary/2010_namcs_web_tables.pdf. Accessed March 19, 2018.

9. Magill MK, Ehrenberger D, Scammon DL, et al. The Cost of Sustaining a Patient-Centered Medical Home: Experience From 2 States. *Ann Fam Med*. 2015;13(5):429-435. doi:10.1370/afm.1851

10. Ferlie E, Fitzgerald L, Wood M, Hawkins C. The Nonspread of Innovations: The Mediating Role of Professionals. *Acad Manage J*. 2005;48(1):117-134. doi:10.2307/20159644

11. Richman and Schulman - Organizational Innovation in Health Care.pdf. http://hmpi.org/wp-content/uploads/2017/02/HMPI-Richman-Mitchell-Schulman-Organizational-Innovation-in-Healthcare.pdf. Accessed April 9, 2018.

12. Berwick DM, Nolan TW, Whittington J. The Triple Aim: Care, Health, And Cost. *Health Aff (Millwood)*. 2008;27(3):759-769. doi:10.1377/hlthaff.27.3.759

13. Sušanj Z. Innovative climate and culture in manufacturing organizations: differences between some European countries. *Soc Sci Inf*. 2000;39(2):349-361. doi:10.1177/053901800039002011

14. Thakur R, Hsu SHY, Fontenot G. Innovation in healthcare: Issues and future trends. *J Bus Res*. 2012;65(4):562-569. doi:10.1016/j.jbusres.2011.02.022

15. Bodenheimer T. Innovations in primary care in the United States. *BMJ*. 2003;326(7393):796-799. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC153099/. Accessed March 23, 2018.

16. Grumbach K, Bodenheimer T. A primary care home for Americans: putting the house in order. *JAMA*. 2002;288(7):889-893.

17. Schoen C, Osborn R, How SKH, Doty MM, Peugh J. In chronic condition: experiences of patients with complex health care needs, in eight countries, 2008. *Health Aff Proj Hope*. 2009;28(1):w1-16. doi:10.1377/hlthaff.28.1.w1

18. Primary Care: Our First Line of Defense. http://www.commonwealthfund.org/publications/health-reform-and-you/primary-care-our-first-line-of-defense. Published June 12, 2013. Accessed March 17, 2018.

19. Shi L. Experience of primary care by racial and ethnic groups in the United States. *Med Care*. 1999;37(10):1068–1077.

20. Shi L. The relationship between primary care and life chances. *J Health Care Poor Underserved*. 1992;3(2):321–335.

21. O'Malley AS, Forrest CB, Politzer RM, Wulu JT, Shi L. Health center trends, 1994–2001: what do they portend for the federal growth initiative? *Health Aff (Millwood)*. 2005;24(2):465–472.

22. Starfield Barbara, Shi Leiyu, Macinko James. Contribution of Primary Care to Health Systems and Health. *Milbank Q*. 2005;83(3):457-502. doi:10.1111/j.1468-0009.2005.00409.x

23. Rittenhouse DR, Shortell SM. The Patient-Centered Medical Home: Will It Stand the Test of Health Reform? *JAMA*. 2009;301(19):2038-2040. doi:10.1001/jama.2009.691

24. Will Generalist Physician Supply Meet Demands Of An Increasing And Aging Population? | Health Affairs. https://www.healthaffairs.org/doi/abs/10.1377/hlthaff.27.3.w232. Accessed March 19, 2018.

25. Edwards ST, Bitton A, Hong J, Landon BE. Patient-Centered Medical Home Initiatives Expanded In 2009–13: Providers, Patients, And Payment Incentives Increased. *Health Aff (Millwood)*. 2014;33(10):1823-1831. doi:10.1377/hlthaff.2014.0351

26. Takach M, Gauthier A, Kaye N. Strengthening Primary and Chronic Care: State Innovations to Transform and Link Small Practices. http://www.commonwealthfund.org/publications/fund-reports/2010/dec/strengthening-primary-and-chronic-care. Published December 15, 2010. Accessed March 24, 2018.

27. Lawlor ANM. Realizing Health Reform's Potential: How the Affordable Care Act Will Strengthen Primary Care and Benefit Patients, Providers, and Payers. :28.

28. Nielsen M, Buelt L, Patel K, Nichols LM, Fund MM. The patient-centered medical home's impact on cost and quality. *Annu Rev Evid*. 2014;2015:202014–2015.

29. Walston SL, Chou AF. Healthcare Restructuring and Hierarchical Alignment: Why Do Staff and Managers Perceive Change Outcomes Differently? *Med Care*. 2006;44(9):879-889. http://www.jstor.org/stable/41219533. Accessed March 23, 2018.

30. Zimring C, Augenbroe GL, Malone EB, Sadler BL. Implementing Healthcare Excellence: The Vital Role of the CEO in Evidence-Based Design. *HERD Health Environ Res Des J Lond*. 2008;1(3):7-21. https://search-proquest-com.proxy1.library.jhu.edu/docview/230003438/abstract/B904AF9CD36D43C5PQ/1. Accessed March 24, 2018.

31. Khatri N, Baveja A, Boren SA, Mammo A. Medical Errors and Quality of Care: From Control to Commitment. *Calif Manage Rev*. 2006;48(3):115-141. doi:10.2307/41166353

32. Medicare Accountable Care Organization Results For 2015: The Journey To Better Quality And Lower Costs Continues. Health Affairs. http://healthaffairs.org/blog/2016/09/09/medicare-accountable-care-organization-results-for-2015-the-journey-to-better-quality-and-lower-costs-continues/. Accessed February 17, 2017.

33. DEARING JW, MEYER G, KAZMIERCZAK J. Portraying the New: Communication Between University Innovators and Potential Users. *Sci Commun*. 1994;16(1):11-42. doi:10.1177/0164025994016001002

34. Meyers D, Peikes D, Genevro J, et al. The roles of patient-centered medical homes and accountable care organizations in coordinating patient care. 2010.

35. Moran KJ, Burson R. Understanding the Patient-Centered Medical Home: *Home Healthc Nurse*. 2014;32(8):476-481. doi:10.1097/NHH.0000000000000127

36. Saha S, Beach MC, Cooper LA. Patient Centeredness, Cultural Competence and Healthcare Quality. *J Natl Med Assoc*. 2008;100(11):1275-1285. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2824588/. Accessed March 18, 2018.

37. Defining the PCMH | PCMH Resource Center. https://pcmh.ahrq.gov/page/defining-pcmh. Accessed March 18, 2018.

38. Payment Reform | Patient-Centered Primary Care Collaborative. https://www.pcpcc.org/topic-page/payment-reform. Accessed March 19, 2018.

39. Sullivan K. The verdict is in: All three of CMS's "medical home" demonstrations have failed. The Health Care Blog. https://thehealthcareblog.com/blog/2018/06/07/the-verdict-is-in-all-three-of-cmss-medical-home-demonstrations-have-failed/. Published June 7, 2018. Accessed April 24, 2019.

40. Miller WL. Patient-Centered Medical Home (PCMH) Recognition: A Time for Promoting Innovation, Not Measuring Standards. *J Am Board Fam Med*. 2014;27(3):309-311. doi:10.3122/jabfm.2014.03.140079

41. PCMH 2014 Standards FAQ.pdf. http://www.ncqa.org/Portals/0/Programs/Recognition/PCMH/PCMH%202014%20Standards%20FAQ.pdf?ver=2017-08-28-153044-927. Accessed February 27, 2018.

42. The Patient-Centered Medical HomeA Systematic Review | Annals of Internal Medicine | American College of Physicians. http://annals.org/aim/fullarticle/1402441/patient-centered-medical-home-systematic-review. Accessed February 27, 2018.

43. Marsteller JA, Hsu Y-J, Gill C, et al. Maryland Multipayor Patient-centered Medical Home Program: A 4-Year Quasiexperimental Evaluation of Quality, Utilization, Patient Satisfaction, and Provider Perceptions. *Med Care*. 2018;Publish Ahead of Print. doi:10.1097/MLR.0000000000000881

44. Jason Neal MA, Ravi Chawla MBA, Christine M. Colombo MBA, Richard L. Snyder MD, and Somesh Nigam P. Medical Homes: Cost Effects of Utilization by Chronically Ill Patients. *Am J Manag Care*. 2015;21(January 2015 1). http://www.ajmc.com/journals/issue/2015/2015-vol21-n1/medical-homes-cost-effects-of-utilization-by-chronically-ill-patients/. Accessed August 15, 2017.

45. Nutting PA, Miller WL, Crabtree BF, Jaen CR, Stewart EE, Stange KC. Initial Lessons From the First National Demonstration Project on Practice Transformation to a Patient-Centered Medical Home. *Ann Fam Med*. 2009;7(3):254-260. doi:10.1370/afm.1002

46. Solberg LI, Crain AL, Tillema JO, et al. Challenges of Medical Home Transformation Reported by 118 Patient-Centered Medical Home (PCMH) Leaders. *J Am Board Fam Med*. 2014;27(4):449-457. doi:10.3122/jabfm.2014.04.130303

47. Kahn KL, Timbie JW, Friedberg MW, et al. Evaluation of CMS's Federally Qualified Health Center (FQHC) Advanced Primary Care Practice (APCP) Demonstration. https://www.rand.org/pubs/research_reports/RR886z2.html. Published 2017. Accessed February 28, 2018.

48. Crabtree BF, Nutting PA, Miller WL, Stange KC, Stewart EE, Jaén CR. Summary of the National Demonstration Project and Recommendations for the Patient-Centered Medical Home. *Ann Fam Med*. 2010;8(Suppl 1):S80-S90. doi:10.1370/afm.1107

49. Patient-Centered Medical Home PCMH. http://www.ncqa.org/programs/recognition/practices/patient-centered-medical-home-pcmh. Accessed February 27, 2018.

50. NCQA_Evidence_Report_102017.pdf. http://www.ncqa.org/Portals/0/Programs/Recognition/PCMH/NCQA_Evidence_Report_102017.pdf?ver=2017-10-25-145221-850. Accessed March 20, 2018.

51. Friedberg MW, Rosenthal MB, Werner RM, Volpp KG, Schneider EC. Effects of a Medical Home and Shared Savings Intervention on Quality and Utilization of Care. *JAMA Intern Med*. 2015;175(8):1362-1368. doi:10.1001/jamainternmed.2015.2047

52. Rosenthal MB, Sinaiko AD, Eastman D, Chapman B, Partridge G. Impact of the Rochester Medical Home Initiative on Primary Care Practices, Quality, Utilization, and Costs. *Med Care*. 2015;53(11):967-973. doi:10.1097/MLR.0000000000000424

53. Pines JM, Keyes V, Hasselt M van, McCall N. Emergency Department and Inpatient Hospital Use by Medicare Beneficiaries in Patient-Centered Medical Homes. *Ann Emerg Med*. 2015;65(6):652-660. doi:10.1016/j.annemergmed.2015.01.002

54. Vermont-Blueprint-for-Health-2015-Annual-Report-FINAL-1-27-16.pdf. http://blueprintforhealth.vermont.gov/sites/blueprint/files/BlueprintPDF/AnnualReports/Vermont-Blueprint-for-Health-2015-Annual-Report-FINAL-1-27-16.pdf. Accessed March 21, 2018.

55. Sinaiko AD, Landrum MB, Meyers DJ, et al. Synthesis Of Research On Patient-Centered Medical Homes Brings Systematic Differences Into Relief. *Health Aff Proj Hope*. 2017;36(3):500-508. doi:10.1377/hlthaff.2016.1235

56. Rosenthal MB, Alidina S, Friedberg MW, et al. A Difference-in-Difference Analysis of Changes in Quality, Utilization and Cost Following the Colorado Multi-Payer Patient-Centered Medical Home Pilot. *J Gen Intern Med*. 2016;31(3):289-296. doi:10.1007/s11606-015-3521-1

57. Reiss-Brennan B, Brunisholz KD, Dredge C, et al. Association of Integrated Team-Based Care With Health Care Quality, Utilization, and Cost. *JAMA*. 2016;316(8):826-834. doi:10.1001/jama.2016.11232

58. Alexander JA, Cohen GR, Wise CG, Green LA. The Policy Context of Patient Centered Medical Homes: Perspectives of Primary Care Providers. *J Gen Intern Med*. 2013;28(1):147-153. doi:10.1007/s11606-012-2135-0

59. Mendel P, Chen EK, Green HD, et al. Pathways to Medical Home Recognition: A Qualitative Comparative Analysis of the PCMH Transformation Process. *Health Serv Res*. December 2017. doi:10.1111/1475-6773.12803

60. Mendel P, Meredith LS, Schoenbaum M, Sherbourne CD, Wells KB. Interventions in organizational and community context: a framework for building evidence on dissemination and implementation in health services research. *Adm Policy Ment Health*. 2008;35(1-2):21-37. doi:10.1007/s10488-007-0144-9

61. DiMaggio PJ, Powell WW. The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *Am Sociol Rev*. 1983:147–160.

62. Bujold E. The Impending Death of the Patient-Centered Medical Home. *JAMA Intern Med*. 2017;177(11):1559-1560. doi:10.1001/jamainternmed.2017.4651

63. Steinbrook R. The Repeal of Medicare's Sustainable Growth Rate for Physician Payment. *JAMA*. 2015;313(20):2025-2026. doi:10.1001/jama.2015.4550

64. Takach M, Townley C, Yalowich R, Kinsler S. Making Multipayer Reform Work: What Can Be Learned From Medical Home Initiatives. *Health Aff (Millwood)*. 2015;34(4):662-672. doi:10.1377/hlthaff.2014.1083

65. Westphal JD, Gulati R, Shortell SM. Customization or Conformity? An Institutional and Network Perspective on the Content and Consequences of TQM Adoption. *Adm Sci Q*. 1997;42(2):366-394. doi:10.2307/2393924

66. Meyer JW, Rowan B. Institutionalized Organizations: Formal Structure as Myth and Ceremony. *Am J Sociol*. 1977;83(2):340-363. doi:10.1086/226550

67. Center for Medicare & Medicaid Innovation. Federally Qualified Health Center Demonstration Frequently Asked Questions. https://innovation.cms.gov/initiatives/fqhcs/fqhc-faqs.html. Accessed April 27, 2019.

68. About Half of the States Are Implementing Patient-Centered Medical Homes for Their Medicaid Populations | Commonwealth Fund. https://www.commonwealthfund.org/publications/journal-article/2012/nov/about-half-states-are-implementing-patient-centered-medical. Accessed April 27, 2019.

69. Rogers EM. *Diffusion of Innovations, 4th Edition*. Simon and Schuster; 2010.

70. Frambach RT, Schillewaert N. Organizational innovation adoption: a multi-level framework of determinants and opportunities for future research. *J Bus Res*. 2002;55(2):163-176. doi:10.1016/S0148-2963(00)00152-1

71. Damanpour F, Schneider M. Phases of the Adoption of Innovation in Organizations: Effects of Environment, Organization and Top Managers1. *Br J Manag*. 2006;17(3):215-236. doi:10.1111/j.1467-8551.2006.00498.x

72. Cool KO, Dierickx I, Szulanski G. Diffusion of Innovations within Organizations: Electronic Switching in the Bell System, 1971-1982. *Organ Sci*. 1997;8(5):543-559. https://www.jstor.org/stable/2635221. Accessed February 20, 2019.

73. Webber M. Brown, L.A. 1981: Innovation diffusion: a new perspective. London: Methuen. *Prog Hum Geogr*. 2006;30(4):487-489. doi:10.1191/0309132506ph620xx

74. Nord R, Tucker S. Implementing Routine and Radical Innovations. https://scholar.google.com/scholar?hl=en&as_sdt=0%2C21&q=Nord%2C+W.+R.+and+S.+Tucker+%281987%29%2C+Implementing+Routine+and+Radical+Innovations%2C+Lexington%2C+MA%3A+Lexington+Books&btnG=. Published 1987. Accessed May 7, 2019.

75. Attewell P. Technology Diffusion and Organizational Learning: The Case of Business Computing. *Organ Sci*. 1992;3(1):1-19. https://www.jstor.org/stable/2635296. Accessed February 20, 2019.

76. Kruglanski AW, Chernikova M, Rosenzweig E, Kopetz C. On motivational readiness. *Psychol Rev*. 2014;121(3):367-388. doi:10.1037/a0037013

77. Ram S. “Forced” Adoption of Innovations in Organizations: Consequences and Implications. :10.

78. Tolbert PS, Zucker LG. Institutional sources of change in the formal structure of organizations: The diffusion of civil service reform, 1880-1935. 1983.

79. Braunscheidel MJ, Hamister JW, Suresh NC, Star H. An institutional theory perspective on Six Sigma adoption. *Int J Oper Prod Manag*. 2011;31(4):423-451. doi:10.1108/01443571111119542

80. Ariely D, Lanier WL. Disturbing Trends in Physician Burnout and Satisfaction With Work-Life Balance: Dealing With Malady Among the Nation’s Healers. *Mayo Clin Proc Rochester*. 2015;90(12):1593-1596. https://search.proquest.com/docview/1739053573/citation/E3BC9F4065304E33PQ/1.

81. Jackson GL, Williams JW. Does PCMH “Work”?—The Need to Use Implementation Science to Make Sense of Conflicting Results. *JAMA Intern Med*. 2015;175(8):1369-1370. doi:10.1001/jamainternmed.2015.2067

82. Crabtree BF, Chase SM, Wise CG, et al. Evaluation of Patient Centered Medical Home Practice Transformation Initiatives. *Med Care*. 2011;49(1):10-16. doi:10.1097/MLR.0b013e3181f80766

83. Fontaine P, Whitebird R, Solberg LI, Tillema J, Smithson A, Crabtree BF. Minnesota's Early Experience with Medical Home Implementation: Viewpoints from the Front Lines. *J Gen Intern Med*. 2015;30(7):899-906. doi:10.1007/s11606-014-3136-y

84. Friedberg MW. The Potential Impact of the Medical Home on Job Satisfaction in Primary Care: Comment on "Patient-Centered Medical Home Characteristics and Staff Morale in Safety Net Clinics." *Arch Intern Med*. 2012;172(1):31-32. doi:10.1001/archinternmed.2011.579

85. Reid RJ, Coleman K, Johnson EA, et al. The Group Health Medical Home At Year Two: Cost Savings, Higher Patient Satisfaction, And Less Burnout For Providers. *Health Aff (Millwood)*. 2010;29(5):835-843. doi:10.1377/hlthaff.2010.0158

86. Piderit SK. Rethinking Resistance and Recognizing Ambivalence: A Multidimensional View of Attitudes toward an Organizational Change. *Acad Manage Rev*. 2000;25(4):783-794. doi:10.2307/259206

87. Ladebue AC, Helfrich CD, Gerdes ZT, Fihn SD, Nelson KM, Sayre GG. The experience of Patient Aligned Care Team (PACT) members: *Health Care Manage Rev*. 2016;41(1):2-10. doi:10.1097/HMR.0000000000000048

88. Mitchell R, Parker V, Giles M, Boyle B. The ABC of health care team dynamics: Understanding complex affective, behavioral, and cognitive dynamics in interprofessional teams. *Health Care Manage Rev*. 2018;Publish Ahead of Print. doi:10.1097/HMR.0b013e3182766504

89. Hilligoss B, Song PH, McAlearney AS. Aligning for accountable care: Strategic practices for change in accountable care organizations. *Health Care Manage Rev*. 2017;42(3):192. doi:10.1097/HMR.0000000000000110

90. Gresov C, Drazin R. Equifinality: Functional equivalence in organization design. *Acad Manag Acad Manag Rev Briarcliff Manor*. 1997;22(2):403-428. https://search-proquest-com.proxy1.library.jhu.edu/docview/210953080/abstract/D471C2187DD74CAAPQ/1. Accessed March 22, 2018.

91. Nocon RS, Sharma R, Birnberg JM, Ngo-Metzger Q, Lee SM, Chin MH. Association Between Patient-Centered Medical Home Rating and Operating Cost at Federally Funded Health Centers. *JAMA*. 2012;308(1):60-66. doi:10.1001/jama.2012.7048

92. Cronholm PF, Shea JA, Werner RM, et al. The Patient Centered Medical Home: Mental Models and Practice Culture Driving the Transformation Process. *J Gen Intern Med*. 2013;28(9):1195-1201. doi:10.1007/s11606-013-2415-3

93. Ho L, Antonucci J. The Dissenter's Viewpoint: There Has to Be a Better Way to Measure a Medical Home. *Ann Fam Med*. 2015;13(3):269-272. doi:10.1370/afm.1783

94. Pettigrew AM, Woodman RW, Cameron KS. Studying Organizational Change and Development: Challenges for Future Research. *Acad Manage J*. 2001;44(4):697-713. doi:10.2307/3069411

95. Orlikowski WJ. Improvising Organizational Transformation Over Time: A Situated Change Perspective. *Inf Syst Res*. 1996;7(1):63-92. http://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=4430766&site=ehost-live&scope=site.

96. Naveh E, Meilich O, Marcus A. The effects of administrative innovation implementation on performance: an organizational learning approach. *Strateg Organ*. 2006;4(3):275-302. doi:10.1177/1476127006066969

97. Easterby-Smith M, Lyles MA. *Handbook of Organizational Learning and Knowledge Management*. John Wiley & Sons; 2011.

98. Green LW, Ottoson JM, García C, Hiatt RA. Diffusion Theory and Knowledge Dissemination, Utilization, and Integration in Public Health. *Annu Rev Public Health*. 2009;30(1):151-174. doi:10.1146/annurev.publhealth.031308.100049

99. Green LW, Glasgow RE. Evaluating the Relevance, Generalization, and Applicability of Research: Issues in External Validation and Translation Methodology. *Eval Health Prof*. 2006;29(1):126-153. doi:10.1177/0163278705284445

100. Green LW. From Research to “Best Practices” in Other Settings and Populations. doi:info:doi/10.5993/AJHB.25.3.2

101. Greenhalgh T, Robert G, MacFarlane F, Bate P, Kyriakidou O. Diffusion of Innovations in Service Organizations: Systematic Review and Recommendations. *Milbank Q*. 2004;82(4):581-629. http://www.jstor.org/stable/4149085. Accessed March 23, 2018.

102. Fleuren M, Wiefferink K, Paulussen T. Determinants of innovation within health care organizationsLiterature review and Delphi study. *Int J Qual Health Care*. 2004;16(2):107-123. doi:10.1093/intqhc/mzh030

103. Sutton B. The Rationale for Qualitative Research: A Review of Principles and Theoretical Foundations. *Libr Q Inf Community Policy*. 1993;63(4):411-430. https://www.jstor.org/stable/4308864. Accessed March 8, 2019.

104. Symon G, Cassell C. Taking qualitative methods in organization and management research seriously. *Qual Res Organ Manag Int J*. 2006;1(1):4-12. doi:10.1108/17465640610666606

105. Al-Busaidi ZQ. Qualitative Research and its Uses in Health Care. *Sultan Qaboos Univ Med J*. 2008;8(1):11-19. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3087733/. Accessed March 8, 2019.

106. Miles MB, Huberman AM. *Qualitative Data Analysis: An Expanded Sourcebook*. sage; 1994.

107. Yin RK. *Case Study Research and Applications: Design and Methods*. Sage publications; 2003.

108. http://mhcc.maryland.gov/pcmh/Reports.aspx. Accessed March 27, 2018.

109. TANIO CP, STEFFEN B. An Assessment of Practices that Achieved Pilot Goals. :37.

110. Steffen B. Maryland's Multi-Payer Patient Centered Medical Home Program. :11.

111. White DK, Steffen B. Maryland Multi-Payer PCMH Program Update Presentation to the Health Quality and Cost Council. :10.

112. Purposive Sampling. In: *The SAGE Encyclopedia of Social Science Research Methods*. 2455 Teller Road, Thousand Oaks California 91320 United States of America: Sage Publications, Inc.; 2004. doi:10.4135/9781412950589.n774

113. Tanio C, Steffen B. Maryland Health Care Commission. :12.

114. Thorne S. Data analysis in qualitative research. *Evid Based Nurs*. 2000;3(3):68-70. doi:10.1136/ebn.3.3.68

115. Mills A, Durepos G, Wiebe E. *Encyclopedia of Case Study Research*. 2455 Teller Road, Thousand Oaks California 91320 United States: SAGE Publications, Inc.; 2010. doi:10.4135/9781412957397

116. Guba EG. ERIC/ECTJ Annual Review Paper: Criteria for Assessing the Trustworthiness of Naturalistic Inquiries. *Educ Commun Technol*. 1981;29(2):75-91. http://www.jstor.org/stable/30219811. Accessed April 15, 2018.

117. Guba EG, S.Lincoln Y. FOURTH GENERATION EVALUATION AS AN ALTERNATIVE. *Educ Horiz*. 1985;63(4):139-141. http://www.jstor.org/stable/42927266. Accessed April 15, 2018.

118. Guba EG, Lincoln YS. Competing paradigms in qualitative research. *Handb Qual Res*. 1994;2(163-194):105.

119. Shadish WR, Cook TD, Campbell DT. Experimental and Quasi-Experimental Designs for Generalized Causal Inference. In: ; 2001.

120. Schram TH. *Conceptualizing Qualitative Inquiry: Mindwork for Fieldwork in Education and the Social Sciences*. Prentice Hall; 2003.

121. Daft RL, Murphy J, Willmott H. *Organization Theory and Design*. Cengage learning EMEA; 2010.

122. Amah E, Daminabo-Weje M, Dosunmu R. Size and Organizational Effectiveness: Maintaining a Balance. :9.

123. Carter NM, Keon TL. Specialization as a Multidimensional Construct. *J Manag Stud*. 1989;26(1):11-28. doi:10.1111/j.1467-6486.1989.tb00714.x

124. Wise CG, Alexander JA, Green LA, Cohen GR, Koster CR. Journey toward a Patient-Centered Medical Home: Readiness for Change in Primary Care Practices. *Milbank Q*. 2011;89(3):399-424. doi:10.1111/j.1468-0009.2011.00634.x

125. Redesigning health systems for quality: Lessons from emerging practices. - PubMed - NCBI. https://www-ncbi-nlm-nih-gov.proxy1.library.jhu.edu/pubmed/17120919. Accessed August 4, 2019.

126. Glisson C, Durick M. Predictors of job satisfaction and organizational commitment in human service organizations. *Adm Sci Q*. 1988;33(1):61-81. doi:10.2307/2392855

127. Damanpour F. Organizational Innovation: A Meta-Analysis of Effects of Determinants and Moderators. *Acad Manage J*. 1991;34(3):555-590. doi:10.2307/256406

128. Sfantou DF, Laliotis A, Patelarou AE, Sifaki- Pistolla D, Matalliotakis M, Patelarou E. Importance of Leadership Style towards Quality of Care Measures in Healthcare Settings: A Systematic Review. *Healthcare*. 2017;5(4). doi:10.3390/healthcare5040073

129. House RJ. A Path Goal Theory of Leader Effectiveness. *Adm Sci Q*. 1971;16(3):321-339. doi:10.2307/2391905

130. Howell JM, Avolio BJ. Transformational leadership, transactional leadership, locus of control, and support for innovation: Key predictors of consolidated-business-unit performance. *J Appl Psychol*. 1993;78(6):891-902. doi:10.1037/0021-9010.78.6.891

131. Howell JM, Frost PJ. A laboratory study of charismatic leadership. *Organ Behav Hum Decis Process*. 1989;43(2):243-269. doi:10.1016/0749-5978(89)90052-6

132. Priestland A, Hanig R. Developing First-Level Leaders. *Harv Bus Rev*. 2005;(June 2005). https://hbr.org/2005/06/developing-first-level-leaders. Accessed June 14, 2019.

133. Waldman DA, Bass BM, Yammarino FJ. Adding to Contingent-Reward Behavior: The Augmenting Effect of Charismatic Leadership. *Group Organ Stud*. 1990;15(4):381-394. doi:10.1177/105960119001500404

134. Transformational and Transactional Leadership and Their Effects on Creativity in Groups: Creativity Research Journal: Vol 13, No 2.

https://www.tandfonline.com/doi/abs/10.1207/S15326934CRJ1302_6. Accessed June 14, 2019.

135. Aarons GA. Transformational and Transactional Leadership: Association With Attitudes Toward Evidence-Based Practice. *Psychiatr Serv*. 2006;57(8):1162-1169. doi:10.1176/ps.2006.57.8.1162

136. Bass BM, Avolio BJ, Jung DI, Berson Y. Predicting unit performance by assessing transformational and transactional leadership. *J Appl Psychol*. 2003;88(2):207-218. doi:10.1037/0021-9010.88.2.207

137. Wagner EH, Gupta R, Coleman K. Practice transformation in the safety net medical home initiative: a qualitative look. *Med Care*. 2014;52(11 Suppl 4):S18-22. doi:10.1097/MLR.0000000000000196

138. Timbie J, Mahmud A, Buttorff C, Meza E. *Patient-Centered Medical Home Implementation in Indian Health Service Direct Service Facilities*. RAND Corporation; 2018. doi:10.7249/RR2348

139. Recognition as a Patient-Centered Medical Home: Fundamental or Incidental? https://www-ncbi-nlm-nih-gov.proxy1.library.jhu.edu/pmc/articles/PMC3707242/. Accessed August 5, 2019.

140. Kennedy MT, Fiss PC. Institutionalization, Framing, and Diffusion: The Logic of TQM Adoption and Implementation Decisions among U.S. Hospitals. *Acad Manage J*. 2009;52(5):897-918. doi:10.5465/amj.2009.44633062

141. Executive Summary Only with Evidence.pdf. https://www.pcpcc.org/sites/default/files/resources/Executive%20Summary%20Only%20with%20Evidence.pdf. Accessed April 27, 2019.

142. Thompson MM, Zanna MP, Griffin DW. Let's not be indifferent about (attitudinal) ambivalence. *Attitude Strength Antecedents Consequences*. 1995;4:361–386.

143. Bovey WH, Hede A. Resistance to organizational change: the role of cognitive and affective processes. *Leadersh Organ Dev J*. December 2001. doi:10.1108/01437730110410099

144. Bordia P, Hobman E, Jones E, Gallois C, Callan VJ. Uncertainty During Organizational Change: Types, Consequences, and Management Strategies. *J Bus Psychol*. 2004;18(4):507-532. doi:10.1023/B:JOBU.0000028449.99127.f7

145. Bass BM. Two Decades of Research and Development in Transformational Leadership. *Eur J Work Organ Psychol*. 1999;8(1):9-32. doi:10.1080/135943299398410

146. Chawla A, Kelloway EK. Predicting openness and commitment to change. *Leadersh Organ Dev J*. September 2004. doi:10.1108/01437730410556734

147. Wanous JP, Reichers AE, Austin JT. Cynicism about Organizational Change: Measurement, Antecedents, and Correlates. *Group Organ Manag*. 2000;25(2):132-153. doi:10.1177/1059601100252003

148. Piderit SK. Rethinking Resistance and Recognizing Ambivalence: A Multidimensional View of Attitudes Toward an Organizational Change. *Acad Manage Rev*. 2000;25(4):783-794. doi:10.5465/amr.2000.3707722

149. Smollan RK. Minds, hearts and deeds: Cognitive, affective and behavioural responses to change. *J Change Manag*. 2006;6(2):143-158. doi:10.1080/14697010600725400

150. Quinn MT, Gunter KE, Nocon RS, et al. Undergoing Transformation to the Patient Centered Medical Home in Safety Net Health Centers: Perspectives from the Front Lines. *Ethn Dis*. 2013;23(3):356-362. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3740439/. Accessed August 5, 2019.

151. Goldman RE, Brown J, Stebbins P, et al. What matters in patient-centered medical home transformation: Whole system evaluation outcomes of the Brown Primary Care Transformation Initiative. *SAGE Open Med*. 2018;6:2050312118781936. doi:10.1177/2050312118781936

152. Naughton D, Adelman AM, Bricker P, Miller-Day M, Gabbay R. Envisioning New Roles for Medical Assistants: Strategies From Patient-Centered Medical Homes. *Fam Pract Manag*. 2013;20(2):7-12. https://www.aafp.org/fpm/2013/0300/p7.html. Accessed August 5, 2019.

153. Nutting PA, Crabtree BF, Miller WL, Stange KC, Stewart E, Jaén C. Transforming Physician Practices To Patient-Centered Medical Homes: Lessons From The National Demonstration Project. *Health Aff Proj Hope*. 2011;30(3):439-445. doi:10.1377/hlthaff.2010.0159

154. Bakanas EL. Resistance to Changing Roles in the Medical Team. *AMA J Ethics*. 2013;13(6):498-503. doi:10.1001/virtualmentor.2013.15.6.ecas2-1306.

155. Friedman A, Howard J, Shaw EK, Cohen DJ, Shahidi L, Ferrante JM. Facilitators and Barriers to Care Coordination in Patient-centered Medical Homes (PCMHs) from Coordinators' Perspectives. *J Am Board Fam Med JABFM*. 2016;29(1):90-101. doi:10.3122/jabfm.2016.01.150175

156. LeTourneau B. Managing Physician Resistance to Change. *J Healthc Manag Chic*. 2004;49(5):286-288. https://search.proquest.com/docview/206735222/abstract/FC914B41C0C94FE9PQ/1. Accessed March 5, 2018.

157. Safety I of M (US) C on the WE for N and P, Page A. *Transformational Leadership and Evidence-Based Management*. National Academies Press (US); 2004. https://www.ncbi.nlm.nih.gov/books/NBK216194/. Accessed August 5, 2019.

158. Uncertainty during Organizational Change: Managing Perceptions through Communication: Journal of Change Management: Vol 7, No 2. https://www.tandfonline.com/doi/full/10.1080/14697010701563379. Accessed August 6, 2019.

159. The Persuasive Influence of Narrative Causality: Psychological Mechanism, Strength in Overcoming Resistance, and Persistence Over Time: Media Psychology: Vol 15, No 3. https://www.tandfonline.com/doi/full/10.1080/15213269.2012.702604. Accessed August 6, 2019.

160. Narrative and Medicine | NEJM. https://www.nejm.org/doi/full/10.1056/NEJMp038249. Accessed August 6, 2019.

161. Nutting PA, Crabtree BF, Miller WL, Stewart EE, Stange KC, Jaén CR. Journey to the Patient-Centered Medical Home: A Qualitative Analysis of the Experiences of Practices in the National Demonstration Project. *Ann Fam Med*. 2010;8(Suppl 1):S45-S56. doi:10.1370/afm.1075

162. Doran T, Maurer KA, Ryan AM. Impact of Provider Incentives on Quality and Value of Health Care. *Annu Rev Public Health*. 2017;38(1):449-465. doi:10.1146/annurev-publhealth-032315-021457

163. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. - PsycNET. https://psycnet.apa.org/record/2000-13324-007. Accessed August 8, 2019.

164. Physician Motivation: Listening to What Pay for Performance Programs and Quality Improvement Collaboratives are Telling Us. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5099521/. Accessed August 8, 2019.

165. Kahneman D, Tversky A. Prospect Theory: An Analysis of Decision under Risk. *Econometrica*. 1979;47(2):263. doi:10.2307/1914185

166. Ramanujam R, Keyser DJ, Sirio CA. Making a Case for Organizational Change in Patient Safety Initiatives. 2:12.

167. Pettigrew AM, Woodman RW, Cameron KS. Studying Organizational Change and Development: Challenges for Future Research. *Acad Manage J*. 2001;44(4):697-713. doi:10.2307/3069411

168. The Patient-Centered Medical Home: An Essential Destination on the Road to Reform. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4106584/#R5. Accessed August 8, 2019.

169. Nelissen P, Selm M van. Surviving organizational change: how management communication helps balance mixed feelings. *Corp Commun Bradf*. 2008;13(3):306-318. doi:http://dx.doi.org.proxy1.library.jhu.edu/10.1108/13563280810893670

170. Anderson C. Presenting and Evaluating Qualitative Research. *Am J Pharm Educ*. 2010;74(8). https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2987281/.

Curriculum Vitae

Ezinne Eze-Ajoku is a physician with a background in Health systems development and quality improvement. In her role as the Advisor for Quality measurement and Evaluation at the Health Strategy and Delivery Foundation she led a nationwide quality improvement initiative for primary health care centers in collaboration with the National Primary Health Center Development Agency. Prior to this she managed the Quality Improvement initiatives at the Delivery Unit of the Honorable Minister of State for Health in 2011-2013. In this role, she guided the process for the development and finalization of the first draft of the Nigerian National quality of care strategy document. She received her Medical degree from Igbinedion University Nigeria and a master's in public health policy and Management from Harvard T.H Chan School of Public Health. Currently, she is a doctoral student in Healthcare management and leadership at Johns Hopkins Bloomberg School of Public Health.