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Reduction of Centers for Medicare and Medicaid Services Reimbursement Penalty Risk

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Abstract

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MBA, University of Phoenix, 2015

BS, Western Kentucky University, 2013

Doctoral Study Submitted in Partial Fulfillment

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Abstract

Healthcare centers face increasing revenue risk under the Medicare Access and Children's Health Insurance Program Reauthorization Act (MACRA). The purpose of this multiple case study was to explore strategies that successful leaders of healthcare centers use to mitigate the risk of reimbursement penalties under MACRA. The conceptual framework of this study was Generation 3 cultural-historical activity theory (CHAT-III), and the analysis process used was Yin's recursive and iterative phases. Participants of this study were 6 leaders of healthcare centers in the United States identified as having high quality and low cost via the Centers for Medicare and Medicaid public use files. Semistructured interviews were used to explore the identification of strategic opportunity, strategy formation, implementation, and control. Themes for organizational culture that emerged from data analysis included a foundation core with flexibility and iterative process-improvement practice. Themes in the strategy formation process included total employee involvement and a quality-first, cost-benefit strategy structure. Themes in the implementation process included multiple departmental and organizational collaboration, task-based implementation, and data transparency. Localized cadence meetings were a theme in the control process. Improvements to the organization as a result of this study include a series of standards for organizational culture, a toolbox including CHAT-III as a tool for the identification of strategic opportunity and a methodology for strategy formation and implementation, and control to help ensure financial sustainability. Implications for positive social change include the increased probability of continued ready access to healthcare, improved population health, and lower mortality rates for the communities served.

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Acknowledgments

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Section 1: Foundation of the Study

The Patient Protection and Affordable Care Act (ACA) of 2010 substantially increased the number of United States citizens covered by healthcare insurance and bent the healthcare cost curve to reduce total spend on healthcare while setting expectations for quality and cost per capita (ACA, 2010; Obama, 2016). The Medicare Access and Children's Health Insurance Program (CHIP) Reauthorization Act (MACRA) of 2015's Quality Payment Program (QPP) tied clinical outcomes and cost of healthcare delivery to reimbursement (DHHS, 2017; MACRA, 2015). Under MACRA reform, eligible clinicians or clinical healthcare center groups under a single Taxpayer Identification Number (TIN) may participate via one of two tracks: Advanced Alternative Payment Models (APMs), or the QPP (DHHS, 2017; MACRA, 2015). The Center for Medicare and Medicaid Services (CMS) translates quality and cost metrics into the Quality and Resource Use Report (QRUR) divided across four quadrants based on cost and quality with penalties assigned to the low quality, high cost, and bonuses assigned to the high quality, low cost quadrant (CMS, 2017d). The remaining two quadrants receive no penalty or bonus (CMS, 2017d). Most clinicians and healthcare centers fall outside of the high quality, low cost quadrant of the annual QRUR, demonstrating a failure of healthcare center leaders to meet clinical quality and cost per capita requirements against their peers (MACRA, 2015; QRUR, 2017). CMS, under the QPP, assigns reimbursement penalties or incentives incrementally trending up from ±4% to ±9 by 2022 based on a series of weighted composite scores for Category One and Two practices (CMS, 2017d; MACRA, 2015). APMs carry higher risk and are a Category Three practice (CMS, 2017d). Rutherford (2017) found that CMS reimbursement accounts for 31% of total

revenue for healthcare centers in the United States. Healthcare center leaders can minimize the risk of reimbursement penalties once they understand what strategies have been proven successful for healthcare centers that consistently land in the high quality, low cost quadrant of the QRUR.

Background of the Problem

Changes in demographics and constraints in funding; coupled with increasing demand is resulting in difficulties in effectively managing sustainable healthcare systems (Arisha & Rashawn, 2016; Kessels, Van Herck, Dancet, Annemans, & Sermeus, 2015). The intense focus on improving and advancing the quality of healthcare in the United States is not new; however, it increased substantially based on two Institute of Medicine reports: *To Err is Human: Building a Safer Health System,* and *Crossing the Quality Chasm: A New Health System for the 21st Century* (Masters, 2015). The national health expenditure costed taxpayers $3.2 trillion and 17.8% of the gross domestic product (GDP) in 2015, increasing to $3.3 trillion and 17.9% of GDP in 2016 (CMS, 2017b, 2017c). Medicare spending increased 4.5% and Medicaid increased 9.7% from 2014 to 2015, and 3.6% and 3.9% from 2015 to 2016 respectively (CMS, 2017b, 2017c). The ACA and MACRA legislation passed as a means to ensure access to healthcare, reduce the cost per capita, and increase the quality of healthcare by tying reimbursement to the quality of care delivery (CMS, 2017b; Keehan et al., 2017; Levine, Linder, & Landon, 2016; MACRA, 2015). MACRA requires healthcare centers to focus strategies on reducing cost and increasing quality in an environment of rising numbers of insured patients under the ACA (MACRA, 2015). Strategies that fail to raise quality and reduce

cost per beneficiary may result in opportunity cost, or assignment of reimbursement penalties, thereby placing fiscal sustainability of the healthcare center at risk.

Problem Statement

Healthcare centers that accept Medicare face revenue risk under the ACA and MACRA (ACA, 2010; MACRA, 2015; Venkataraman, 2015). Medicare represents 31% of total outpatient healthcare centers' revenue on average in the United States. (Rutherford, 2017). The general business problem was that some healthcare centers are at risk of losing a sizable portion of their total revenue due to reimbursement penalties for inadequate quality and excessive cost under MACRA. The specific business problem is that some healthcare centers' leaders lack strategies to mitigate the risk of reimbursement penalties under MACRA's QPP.

Purpose Statement

The purpose of this qualitative multiple case study was to explore strategies that successful healthcare center leaders have used to mitigate the risk of reimbursement penalties under MACRA's QPP. The targeted population sample comprised six healthcare center leaders in physician practices in the United States who had been successful in reducing the risk of reimbursement penalties per MACRA's pay-for-performance model based on the 2016 QRUR scores from the 2015 performance year. Improving the quality of healthcare and reducing the cost of delivery of that healthcare has positive social change implications by providing better outcomes at a lower cost to the patients within the communities the healthcare center serves and by reducing access-based mortality rates (Watters et al., 2015). Facilities in rural areas, where healthcare may be provided by a single entity, in the United States that depend on

at-risk revenue under MACRA, and have the highest newly insured patient populations under the ACA, could benefit from the results of this study by increasing fiscal sustainability, ensuring continued high quality healthcare delivery to the communities they serve.

Nature of the Study

Researchers utilize a systematic approach to generate knowledge using quantitative, qualitative, or mixed method methodologies (Bhaskar & Manjuladevl, 2016). Qualitative researchers seek to explore the *what*, *how*, or *why* of a given event, activity, or phenomenon (Dodgson, 2017; Yin, 2018), thus the qualitative method was appropriate for this study exploring how some healthcare center leaders have implemented strategies to lower the risk of reimbursement penalty under MACRA. Quantitative researchers use a range of methods to examine social phenomena through systematic investigation using statistical or numerical data to identify variables, relationships, or differences and assume the phenomena under study can be numerically measured (Watson, 2015). Quantitative research is grounded in the belief that objective measurements are independent of the environment or the researcher, removing contextual factors from the measurement situation (Polit & Beck, 2017). In this study, I identified nodal trends and themes in strategy formation and implementation, organizational culture, and organization history that contributed to the strategy process within the context of leader interviews and historical data exploration. Quantitative methodology was not appropriate because its use removes contextual factors, such as organizational culture and history or variations and standards of nodal themes, that provide insight into what made the strategy successful, why that specific strategy worked within the culture

and history of the organization, and how the strategy moved quality and cost metrics. The quantitative approach was not an option for the methodology of this study because strategies were not quantitatively measured and the culture and history as a context were critical to understanding global themes. Utilization of mixed methods allows the researcher to combine the data collection and analytics of both qualitative and quantitative methodologies (Watson, 2015). Mixed method methodology was not appropriate for this study because quantitative data collection techniques and analysis were not suitable to answer the research question.

Case study and phenomenology are examples of qualitative designs used by the researchers in monomethod or multimethod studies (Roberts & Castell, 2016). The overarching research goal was an exploration of strategies that some healthcare center leaders used to minimize the risk of reimbursement penalties under the MACRA's QPP. The Type III embedded multiple case study design was appropriate for this study because embedded units of analysis were used to focus on strategies that increased clinical quality (see Yin, 2018), reduced total cost of care per capita, or were a mix that positively impacted both metrics. Researchers use a phenomenological study design to explore the essence of an event, activity, or phenomenon to define meaning identified by participants (Dodgson, 2017). Since this study was not designed to explore the meaning of participants' experiences, the phenomenological design was not appropriate.

Research Question

What strategies do successful healthcare center leaders use to mitigate the risk of reimbursement penalties under MACRA's QPP?

Interview Questions

1. What strategies have leaders in your healthcare centers implemented that have successfully improved your facilities' QPP quality scores?
2. How did leaders go about implementing the strategy that successfully improved the facilities' QPP quality scores?
3. What strategies have leaders in your healthcare centers implemented that have successfully reduced your facilities' cost per capita or cost per beneficiary?
4. How did leaders go about implementing the strategy that successfully reduced the facilities cost per capita or cost per beneficiary?
5. What strategies have leaders in your healthcare centers used to resolve barriers to implementation of your quality and cost strategies?
6. What metrics are used to validate success for your strategies?
7. What additional information that we did not cover would like to discuss, or are there any clarifications that you would like to make?

Conceptual Framework

Cultural-historical activity theory (CHAT) was initially proposed by Vygotsky (1978) as a framework to explore the relationship between the human mind and activity and has since been called Generation One CHAT. Vygotsky demonstrated the interactions and relationships among mediating artifacts, subject, object, and outcome (Engeström, 1999). Leonti'ev (1979) built on Generation One CHAT, now termed Generation Two CHAT, to include rules, community, and division of labor. Engeström (1987) provided the modern version—Generation 3 CHAT—to add a potential shared object between two independent CHATs to expand the unit of analysis to a collective

activity system as well as focus on social transformation (Engeström, 1999). Researchers using any generation of CHAT focus on an object of activity, or the aim towards which people collectively work to ensure identified needs become met (Creig, Entwistle, & Beech, 2012). Third Generation CHAT suggests that collective systems may successfully work through a community of shared activities to derive innovation, strategy, and implement a shared object across independent CHATs (Engeström, 1999).

To meet MACRA's QPP model, healthcare delivery may need to transect the physical boundaries of the healthcare center to align work with hospitals, community resources, vendors, and payers to reduce cost and increase the quality of care. Researchers using Generation III CHAT look at collective activity systems all working to attain a shared object through a set of coordinated activities (Engeström, 1999). Such a view provided me with a deeper understanding of strategies and implementation components some healthcare center leaders have used to mitigate the risk of reimbursement penalties under MACRA's QPP.

Operational Definitions

Activity: The main form of mediation in the relationships subjects have or establish with the objective world (Marietto, Sanches, & Meireles, 2012).

Category 1 practices: Groups of providers who bill CMS as fee-for-service with no link to payment quality and is a no-risk transitional period between Physicians Quality Reporting System (PQRS) and Merit-based Incentive Payment System (MIPS) (CMSb, 2018).

Category 2 practices: Groups of providers where CMS reimbursement rate adjustments are made automatically based on performance scores and defined as fee-for-service with a link of payment to quality and value (CMSb, 2018).

Mediating artifact: May include artifacts, social individuals, or prior knowledge that contribute to the subject's mediating action (Vygotsky, 1978).

Internal contradiction: Internal dissonance within the activity system that may create dissonance or misalignment of the components of the system that would impede object attainment (Engström, 2001).

Shared object: One or more coevolutional goals shared by two or more individual activity systems (Engström, 1999).

Assumptions, Limitations, and Delimitations

Assumptions

Assumptions are beliefs or presumed truths within a study that cannot be proven (Leedy & Ormrod, 2016). I made three assumptions in this study. My first assumption was that information presented by CMS through the PUF was accurate and truthful and represented healthcare centers in the correct quadrant. Second, I assumed that the participants I interviewed were forthcoming and honest when sharing their experiences, perceptions, and strategies and that such information was holistic and did not lack information that would impact replication. My third assumption was that participants would offer their best and most relevant strategies to increase clinical quality and lower the cost of healthcare delivery in a healthcare center setting.

Limitations

Limitations are constraints that are beyond the control of the research, but that could potentially impact the study or findings (Leedy & Ormrod, 2016). I identified four limitations concerning this study. The first limitation was the resource variance between healthcare centers that may impede the replication of identified strategies. Another limitation was the variation in ability based on the clinical leader mix that may or may not have the skills needed to implement and control business strategies or are at odds with ethical principles between altruistic and utilitarianism views. Third, the patient population within the community has a significant impact on both quality and cost yet, individual patient actions and adherence is out of the control of the health center leader and may be detrimental to both quality and cost. The last limitation was variance in the ability to obtain big data associated with population health management among healthcare centers.

Delimitations

Delimitations arise from limitations in the scope of the study and the conscious exclusionary and inclusionary decisions made while developing the study plan yielding the defining boundaries of the study (Leedy & Ormrod, 2016). There were three delimitations for this study. Study targets were healthcare center leaders that had demonstrated high quality, low cost attainment. Participants were individuals that had working knowledge and participation in increasing the quality and reducing the cost of care delivery strategy within the healthcare center. Finally, participants were healthcare center leadership within the United States.

Significance of the Study

Contribution to Business Practice

CMS assigns reimbursement penalties or incentives trending up from ±4% in 2019 to ±9 in 2022 based on total scores under the four metrics as a series of weighted composite scores (CMS, 2017a; MACRA, 2015). Medicare reimbursement is on average 31% of physician practice revenue in the United States (Rutherford, 2017). Identifying and exploring proven strategies to mitigate reimbursement risk contributes to healthcare center financial sustainability by reducing the incrementally increasing risk to marginal profit in a disproportionate percentage of the payor mix. Participants within this study were individuals who achieved high quality and low cost, which yields an incrementally increasing reimbursement bonus of 4% in 2019 to 9% in 2022 (see MACRA, 2015). Healthcare centers that successfully replicate such strategies may increase total profit margins by achieving bonus reimbursement in 31% of the payor mix or by receiving highest achiever bonus above the standard bonuses structure as outlined by the QPP (CMS, 2017a).

Implications for Social Change

Healthcare leaders face a unique social enterprise challenge as healthcare institutions exist to promote healthcare as a social purpose (Luke & Chu, 2013). Loss of financial solvency as a result of falling into the low quality, high cost quadrant of the QRUR may increasingly put healthcare access at risk. Loss of access yields higher mortality rates in communities (Watters et al., 2015), especially in critical access facilities across the United States that treat the poor and near-poor populations whose ready access to regular healthcare center care has seen recent increases under the ACA

from 66.9% to 73.6% and 71.1% to 75.9% respectively (CDC, 2015). Such facilities are especially vulnerable to financial failure under the QPP, thus also being assailable to increased community mortality rates (Watters et al., 2015). Providing proven strategies that mitigate the risk to marginal profits under the QPP may allow healthcare center leaders to minimize or mitigate the potential for financial failure, the loss of healthcare access, and the risk for increased mortality to the community served.

A Review of the Professional and Academic Literature

My focus in the review of the professional and academic literature was to explore the phenomenon of strategic opportunity identification and implementation within the healthcare industry. The purpose of this qualitative multiple case study was to explore strategies that some healthcare center leaders have implemented to minimize the risk of reimbursement penalties under MACRA's QPP. The intended professional goal for the findings of this study was to contribute to the fiscal sustainability of healthcare centers by providing proven strategies and an implementation platform to reduce the risk of increasing reimbursement penalties due to low quality and high cost healthcare delivery.

I located journal articles in the Emerald Management Journals, Sage, and ProQuest Central databases. Keywords used in searches were, (a) *cultural-historical activity theory*, (b) *healthcare reimbursem*ent, (c) *healthcare strategy*, (d) *strategic implementation*, (e) *ACA*, (f) *MACRA*, and (g) *managing population health*. Ulrich's Global Serials Directory (2018) was used to cross-reference each source reviewed to ensure peer-review quality. Table 1 outlines the contents of this literature review.

Table 1

Content of Literature Review

Reference type	Total	% of total	< 5 years	> 5 years	% < 5 years
Peer-reviewed journals	91	83%	80	11	88%
Non-peer-reviewed journals	1	1%	1	0	100%
Books	5	5%	0	5	0%
Government websites	12	11%	12	0	100%
Total	109	100%	93	16	85.3%

At 85.3%, I met the required minimum of 85% peer-reviewed reference threshold in the study.

The focus of the literature review was determining how best-practice strategies may be implemented in healthcare centers to minimize the risk of reimbursement penalty under the QPP using CHAT as the conceptual framework. I have organized this review of the academic literature into six primary categories, (a) the conceptual framework including contrasting and supportive theories, (b) contemporary quality and cost measures in the United States, (c) the burning platform driving the need for new strategy, (d) the shift to managing population health to manage quality and cost, (e) healthcare center leadership in a low quality, high cost, resource-dependent environment, and (f) promoting action on research implementation for cost and quality. I used critical analysis, research, and synthesis to describe the conceptual framework of this study, which is an extension of the conceptual framework subsection presented earlier in Section 1 and includes both contrasting and supportive theories. A discussion of the impact of legislation on cost and quality data analytics is in the contemporary quality and cost measures in the United States subsection. In the burning platform driving the need

for new strategy portion, I discuss the financial impact of the ACA and MACRA and fiscal sustainability as a driving factor for a new strategy. The shift to managing population health to manage quality and cost subsection includes a description of the conversion towards an epidemiological view to manage total attributed populations and the increasing abandonment of traditional models. Discussion of healthcare center leadership in the face of low quality, high cost, resource-dependent environments follows with specific attention paid to leadership types demonstrated to close the implementation gap. Finally, in the promoting action on research implementation for cost and quality subsection, I focus on future projections in healthcare and identify key strategies for driving down cost and driving up quality in the literature.

Cultural-Historical Activity Theory

Introduction. CHAT is a framework that researchers use to analyze the relationship between the human mind and the activities performed; it is the bridge between culturally and historically developed thought and the actions a person or group takes (Engeström, 1999). Consideration of the history and culture of the environment at the time of building and implementing a strategy is critical to understanding the implementation action and resultant success. In addition to existing as an analytics tool, CHAT also serves as a platform from which to build and launch strategy. In this way, the use of CHAT allowed me to analyze the strategies associated with minimizing the risk of reimbursement penalties under MACRA's QPP and offer a way to launch the strategy successfully, ensuring sustained high quality and low cost access to healthcare for the communities the healthcare center serves.

CHAT was initially proposed by Vygotsky (1978) as an educational psychology framework to explore the relationship between the human mind and activity and has since been called Generation One CHAT (CHAT-I). The lineage of CHAT-I traces back to a reconstruction of psychology using dialectical materialism, classical German philosophy, and previous works by Vygotsky as a means by which to incorporate societal, cultural, and historical dimensions into understanding and deriving an explanation of human mental functioning (Roth & Lee, 2007). Vygotsky demonstrated the interactions between mediating artifacts, subjects, objects, and outcomes (Engeström, 1999) akin to how a scientific approach of stimuli on a subject yields a predictable and consistent reaction (see Figure 1).

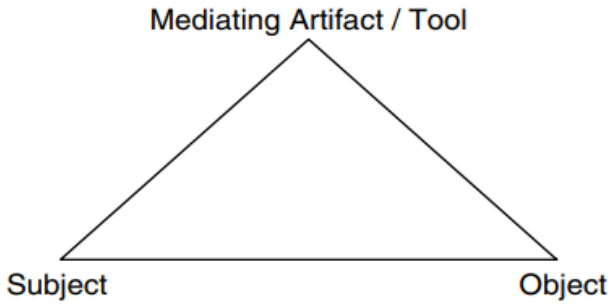


Figure 1. Vygotsky's (1978) Generation I CHAT demonstrating the foundation of CHAT.

Under the principles of CHAT, organisms during their lifetimes and in the course of their evolution as a species do not adapt to the environment, but rather construct it to be able to arrive at a result (Engestrom, 1987). The concepts of CHAT penetrated Western literature via Michael Cole through a mediating role in the Laboratory for Comparative Human Cognition (Roth & Lee, 2007). Within this laboratory, Cole

contributed to the knowledge base and spread of sociocultural and cultural-historical frameworks (Roth & Lee, 2007).

Leont'ev (1979) built on CHAT-I, now termed Generation Two CHAT (CHAT-II), to include rules, community, and division of labor (see Figure 2).

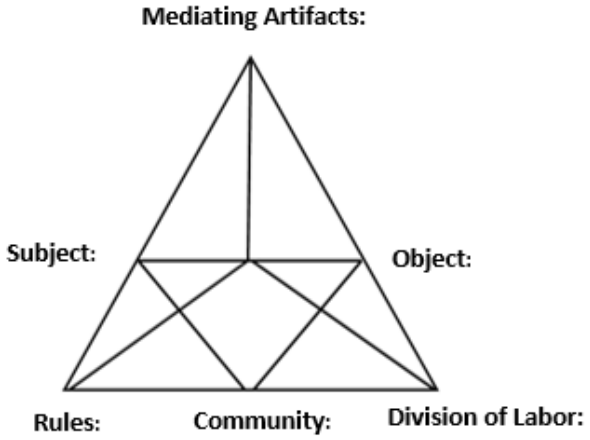


Figure 2. Leonti'ev's (1979) Generation II CHAT demonstrating the addition of community, rules, and division of labor.

Leont'ev remained primarily focused on the cognition of learning and psychological development evolving CHAT-I by linking practical labor activity as coextensive with cognition (Roth & Lee, 2007). CHAT-II was the next evolution in the argument for a framework focused as an overt articulation of a theory for praxis and practical action but is limited to single actions with single outcomes and does not consider the notion of practice—denoting a pattern form of action (Roth & Lee, 2007). As a framework, CHAT-II as a framework was the first to be extended beyond the realm of psychology, cognitive learning, and psychological development as researchers began using it to understand complex systems and the impact of the variables offered within the framework (Roth & Lee, 2007).

Engeström (1987) provided the modern version, Generation 3 CHAT (CHAT-III), to include a potential shared object between two independent activity systems, or link such systems through commonly shared goals (see Figure 3), to expand the unit of analysis to a collective activity system focused on social transformation (Engeström, 1999).

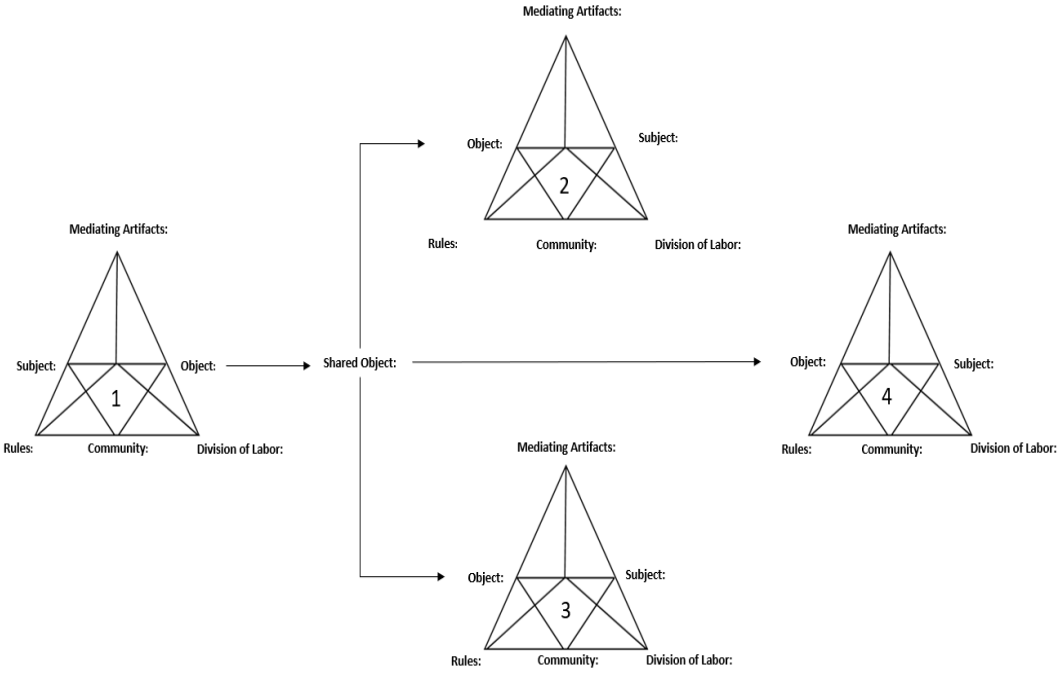


Figure 3. Engeström's (1987) Generation III CHAT demonstrating the addition of the activity system concept.

Researchers using CHAT-III connect work as a collective activity with new practices through activity systems as a unit of analysis, therefore, CHAT-III allows researchers to question and analyze actions with the aim of finding and defining problems and their associated contradictions (Yasukawa, Brown, & Black, 2013). CHAT-III is a practice-based paradigm that provides a robust framework for analyzing professional work practices through a multi-dimensional, systemic approach that accounts for psychological motives; mediating artifacts (tools); and the dynamics of power, money, culture, and

history (Foot, 2014). Activities that people do, the organizations built on the activity, and the interaction of symbiotic organizations significantly impact the outcomes of both the individual company and those with which it interacts.

Both CHAT-II and CHAT-III frameworks focus on three core premises: (a) people act collectively, learn by doing, and communicate with those around them via action; (b) people make, employ, and adapt tools to learn, communicate, and act; and (c) the community is central to the process of development and interpreting meaning (Foot, 2014). CHAT-II centers around an object(s) of activity, or which people collectively work to ensure identified needs become met (Creig et al., 2012). In CHAT-III, interactions between two or more objects within activity systems are the focus of the study (Yasukawa et al., 2013). CHAT-III focuses on the concept of expansive transformation where the object and motive of the activity are reconceptualized to allow for a broader range of possibilities than previously allowable (Yasukawa et al., 2013). Such an expansion of concept increased universality for the framework to be applied across multiple industries and in inter- and multidisciplinary applications. This concept also allows for the interactions necessary for a series of activity systems working in unison to lower total cost of care and increase the quality outcome for the patient as the healthcare center, hospitals, community resources, vendors, and patients are all involved towards a common goal, high quality at low cost.

Identifying barriers that may yield contradictions and disturbances within an activity system that may impede successful implementation of healthcare strategy to minimize reimbursement risk may be critical to understanding internal and external dynamics that would make the strategy successful. Engeström (2008) suggested

researchers pay close attention to contradictions and disturbances within the system in that disturbances can be interpreted as symptoms or manifestations for inner contradictions; such systemic contradictions are critical in finding variance, error, or gaps that would lead to innovative and developmental potential within the system. Engeström terms such development of knowledge *possibility knowledge*, business leaders would call this a synonym for gap analysis. The CHAT-III framework functions on the premise that collective systems may successfully work through a community of shared activities based on a common goal to derive innovation, strategy, and implement said strategy across independent activity systems (Engeström, 2011). Engeström (2011) provided a healthcare application of chat that demonstrates CHAT-III may be both analysis and an application platform in the healthcare setting.

Healthcare delivery that would meet MACRA's QPP model may need to go beyond the physical boundaries of the healthcare center to align work with hospitals, community resources, vendors, and patients to reduce cost and increase the quality of care. CHAT, as a framework, provides ways of using practice-based theory to evaluate previous, current, and anticipated practices; strategies; and the multilevel sociocultural, political-economic, and institutional context of the practice (Foot, 2014). The use of CHAT-III may allow translation of practice-based theory into interconnected activity systems to work towards a common goal through a set of coordinated activities, thereby potentially minimizing the risk of reimbursement penalties under MACRA's pay-for-performance model. It is this level of interconnectivity and the ability of CHAT to close the implementation gap from research to action that is driving a growing interest in this conceptual framework.

As interest and application continue to grow for CHAT, specifically in Western literature, the citation frequency (see Figure 4) and utilization in the academic application have increased exponentially for all generations of CHAT. CHAT has proven to be both a framework for analysis and application in the healthcare industry as well as multiple industries outside of the original psychological and learning origin. CHAT allows for a deep understanding of interactions between the subject, community, and outcome with influences of the division of labor, rules, and mediating artifacts, which afford the researcher a tool to not only analyze a given system, but then to construct solutions.

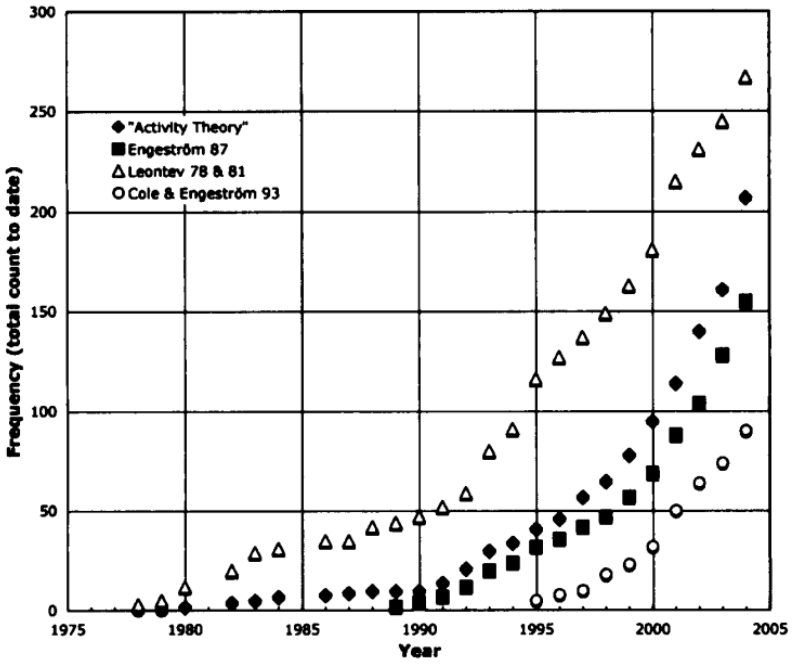


Figure 4. Citation frequencies of CHAT in English language literature within the Institution for Scientific Information's citation database (Roth & Lee, 2007).

Healthcare. Most healthcare institutions build business models on traditional economic or utilitarian frameworks; however, such a model tends to be superficial, only look at outcomes retrospectively and generalizes the phenomenon that is driving metrics (Marietto et al., 2012). External pressures as a specific phenomenon (i.e., hospitals,

community resources, vendors, and patients) may not be inherent and the historical or cultural context not considered. CHAT-III allows for a multiorganizational approach to driving strategy through mediating artifacts with attention to the historical and cultural environment associated with the strategy. Development and implementation of healthcare center strategy is a process involving practices, praxis, and practitioners; CHAT leverages a multi-dimension approach to illuminate the complex interactions of healthcare practices from both the organizational level and the influences of the society the organization is nested (Foot, 2014). In healthcare, CHAT-III enables researchers to analyze the complexities and evolving professional practices and practitioners to engage in reflective research (Foot, 2014). The application of CHAT in organizing thinking allows complex activity systems to become visible and is critical in examining interprofessional communication and collaboration (Eppich & Cheng, 2015). It is evidenced that strategic planning within the healthcare organization is enabled and constrained by both the organization and societal practices yielding a need for multilevel and cross-functional analysis for strategic planning (Foot, 2014). Understanding the phenomenon that is hindering high quality and low cost per capita from a holistic perspective may allow for higher success rates in closing the implementation gap associated with strategies that would yield high quality, low cost healthcare delivery.

CHAT-II and CHAT-III have growing utilization and proof within the healthcare industry based on their multidimensional approach to analyzing and building strategy. CHAT-II is appropriate in single activity systems; CHAT-III is appropriate in multiple activity systems. Engeström (2001) provided an explanation of CHAT-III as an activity system in a situationally raw material (Object 1), a patient entering a physician's office

seeking care and a diagnosis (Object 2), the patient understands the care plan and the impact that the community has on adherence actions (Object 3). Engeström (2011) outlined CHAT-III as a formative intervention and construct within a hospital setting as being based on the design of experiments and research, a background of sociological intervention research, the concept of double stimulation, activity systems as a unit of analysis, and the use of agency as a layer of causality. Engeström provided an analysis of the layered character of formative intervention and ascribed a construct to drive people to formative strategy as an expansion of the concept of double stimulation (Engström, 2011). Such a finding speaks to actions at all levels of the organization, the patient-provider, and healthcare institution-community relationships.

Researchers have proven the effectiveness of CHAT within the patient-provider relationship providing the opportunity to engage the care team and patient in education and self-care and encouraging adherence to an established care plan to drive quality outcomes. Teodorczuk, Mukaetova-Ladinska, Corbett, and Welfare (2015) concluded that CHAT could be effectively used to advance understating of practice gaps to develop transformational approaches to dementia and delirium practice and clinical education. Eppich and Cheng (2015) explored the integration of CHAT-III into an interprofessional medical team with a focus on the theoretical framework to reframe how participants observe and interpret complex social interactions, identify and prioritize topics for debriefing, explore contextual factors promoting or impeding safe and effective patient care, and to facilitate discussion. Eppich and Cheng found that CHAT offers a complementary conceptual framework when used in tandem with an established debriefing strategy as it focuses attention on goal-directed social encounters (work

activities) and uses the activity as the assessment unit. Using CHAT-III within a single entity by looking at the departmental level as independent activity systems demonstrate CHAT-III is a viable framework at the microlevel as much as it is on the macrolevel as individuals and teams of activity systems work toward a common object through collective activities.

White, Burger, and Yearworth (2016) defined CHAT-III as an analytical toolbox to study "goal-directed collective behavior, mediated by and inscribed into emerging artifacts" (p. 988). Operational Research interventions create conditions for collective behavior and provide a succession of models providing a multitude of different perspectives that lead to a deepening of the understanding of the problem as new insight emerges and behavior changes with the new insight (White et al., 2016). This approach provides a coupling of an existing process with CHAT-III and such an approach overcomes problems with multivoicedness, inherent contradiction, and utilized tensions in the activity system to develop collective models, practices, and shape behavior. White et al. found that operational research through the lens of CHAT-III intervention are explained best without universal method but by the relationships between the conceptual elements in the activity system that constitute the activity. The operations approach is common in healthcare center leadership solving and producing strategies for clinical quality and reduction of cost, such an application has been proven effective and is translatable universally when coupled with CHAT-III.

Due to the dynamic and multidimensional approach to CHAT-II and CHAT-III, the framework has been used to analyze and devise action within leadership research. Ho, Chen, and Ng (2016) used CHAT-III to understand the construct of distributed

leadership—a concept traditionally viewed through a socio-cultural activity theory. The concept of leadership is a dynamic and collectively performed activity through a network of individuals. Ho, Chen and Ng found that by structuring the components of leadership based the components of CHAT-III, both within departments and the institution as a whole allowed cross-functional leaders to focus on relevant gaps allowing the department and institutional level to share common goals and outcomes. CHAT-III allows researchers to not only frame out the overarching research question but is a method by which innovation and implementation are possible with cross-department and firm level goals feeding each other through shared common outcomes.

Thompson (2015) examined the question of how to frame research designs to study the interactions between the complexity of the social organization of a school as an institution and the consequent design of curriculum, the social interactions within the institution of staff and student, and the development of individual learning within this setting. The use of culturally and socially acquired knowledge to understand the surrounding environment shapes human action via two critical underlying concepts in all three generations of CHAT—the zone of proximal development and double stimulation (Thompson, 2015). In the healthcare industry, the QPP's high quality at low cost quadrant demonstrates the more capable peer as defined by the zone of proximal development. The development and understanding of an action or task developed alone are institutions that have not sought a strategy for minimizing reimbursement risk under the QPP outside of their institution. CHAT is not limited to the healthcare environment and applies to multiple industries for the holistic investigation and intervention approach that this framework allows for researchers.

Multiple Industries. Researchers using CHAT focus on activities necessary for a specific object allowing the framework to apply to a multitude of industries including venture start-ups, safety, human resources, education, and as an adjunct to existing theory. Engeström (2005) expanded on CHAT to include developmental work research to include the domains of work, technology, and organizations. Engeström continued to support CHAT in business settings through the lens of the world of work being in turmoil, increasingly dominated by runaway objects generated by globalization and greed. Engeström contends engaging practitioners may mitigate runaway objects in expansive reforging of the objects of their work through CHAT. Developmental work research is an interventionist approach specifically targeted at learning in work, technology, and organizations and founded on CHAT as a framework further demonstrating the framework as an adaptive mechanism by which investigation and intervention are possible (Engström, 2005). Healthcare center leaders that accept Medicare and Medicaid are in transition from a fee-for-service model to a merit-based incentive payment system under MACRA. Such a shift is creating a pseudo-startup venture within an existing business model as payments systems shift, healthcare companies are forced to attempt to emerge in the contemporary marketplace by developing new business models around innovative products, services, and product-service mix that will maximize quality outcomes and reduce total cost per beneficiary to ensure revenue capture and drive growth.

Sipola, Puhakka, and Mainela (2016) recognized the high-growth potential within the venture start-up system as a collective object of activity and that the objects and related activities were cultural-historically mediated and embedded in incentive systems

influencing the perception of start-up organizations. Using CHAT-III allowed the researchers to examine venture start-ups from a collective viewpoint, with a multitude of organizations representing individual activity systems through shared objects and outcomes. Sipola et al. suggested that philosophical views founded on a rich understanding of structure, embedded generative mechanisms, and causal powers pave the way for both occurrence and non-occurrence of desired objects and outcomes as standard within the collective. Such a viewpoint further coincides with the comprehensive approach allowed by using CHAT and ensures universality across multiple industries and business practices.

Safety and human resource industries have also proven CHAT to be a useful framework to analyze a system and develop and implement solutions. Yoon et al. (2016) proposed that CHAT-II could be used to analyze the human activity components to accidents specifically in power plant operations through a systematic organization of causal factors and used CHAT-III to examine interactions between activity systems via contradiction analysis. CHAT-III helped in analysis and organization of causal factors of human error-based activities that lead to accidents and produced meaningful information and insights that would not have been possible via existing methods (Yoon et al., 2016). Tkachenko and Ardichvili (2017) conducted a literature review to explore the application of CHAT-II and CHAT-III to human resource development. Tkachenko and Ardichvili found that CHAT when used as an application, looks beyond the individual by looking to the community of people who share the same object for a collective activity to exist. Interconnectivity of the community that surrounds the subject supports the opportunity for CHAT be a positive social change method. There is a growing

multidisciplinary body of knowledge where CHAT, used as a conceptual framework, is an emerging interventionist theory—specifically in the context of formative interventions (Tkachenko & Ardichvili, 2017). This finding supports CHAT as a proven mediating conceptual tool to redesign work practices that allow participants to understand the object of their work collectively, analyze evolving contradictions to develop a new form of practice.

CHAT has been used in the education industry to examine learning and classroom elements to improve the environment and capability of learners and teachers. Patchen and Smithenry (2014) used CHAT-II to examine the interplay of crucial classroom elements and how they vary between tree participant structures and how that variation impacts what students experience as science; specifically, the development of the ability to generate and direct inquiries and student-driven collaboration—defined as the object (outcome). Patchen and Smithenry found incremental and relational interconnection shifts within and between each participant structure and determined that moving beyond traditional speaker-to-audience teaching models to integration and scaffolding of activities that drive learning more closely aligned with authentic science practices. In closing the implementation gap, CHAT was demonstrated by Patchen and Smithenry to allow for a higher level of learning via the zone of proximal development and the ability for the leader to potentially generate future strategy and collaborations. This finding suggests that healthcare center leaders can learn under a CHAT framework from their more capable peers if given appropriate strategy and the history and culture drives the need for learning as a survival requirement—such as that set by MACRA.

CHAT has also been used to fill in missing pieces from other theories including the theory of ecological psychology. Penderson and Bang (2016) sought to set up a theoretical meeting between affordance theory and CHAT. Such a unification finds a base on the hypothesis that affordance theory needs the tenets of CHAT to understand the social nature of the individual-environment relationship. The CHAT framework dives the concept that humans create, purposely produce, and construct the conditions of life; thus, people shape the environment and bend it to the needs through actions using mediating artifacts (Penderson & Bang, 2016). In this way, human activities are immediate and simultaneously mediated. The activities a person does always relate to the historical character of human life, implying the mediated activity occurs simultaneously as the individual meets a given standard as an environmental feature (Penderson & Bang, 2016). This concept frames how humans—thus healthcare center leaders—bend the environment around them to make a change towards an object. If a common object, in this case high quality, low cost healthcare, is the shared object, then all activity systems must bend their environment via mediating artifacts to shape their environment to the shared goal. Such a shaping argues for shared resources and unification of both healthcare and community resources and actions for specific historically and culturally mediated environments, a concept CHAT-III allows.

Contrasting Theory: Chaos

Performance of extensive systems is often difficult to accurately predict even with a deep understanding of the multiple subunits that make up the whole and are eminently predictable (Boeing, 2016; Cottam, Ranson, & Vounckx, 2015). Cottam et al. (2015) found predictability inversely proportional to time and uncertainty within a forecast as

increasing exponentially with over time. Chaos theory, like CHAT, examines systems from a systemic perspective to understand the context in which a system proceeds, but unlike CHAT sees deterministic or complex chaos through the processes of emergence and de-emergence (Cottam et al., 2015; Pryor, 2016). Practitioners of chaos theory argue uncertainty undermines actions beyond the initial onset of action, through the process, and to the output of the object and puts a reality check on human power and control over their environment (Pryor, 2016). Such a reality check lesses the locus of control over the process beyond the onset of implementation. Thus the outcome is random. This concept is in opposition to the argument Engström makes in that organisms during their lifetimes and evolution as a species, are not molded by their environment, but rather, construct it to be able to arrive at a result (Engeström, 1987).

Born from a branch of dynamical systems mathematics, chaos theory, found beginning in the late 1800s with Henri Poincare while studying the three-body problem and was the founding theory for the field of ergodic theory (Poincare, 1890). Chaos theory finds proof in multiple industry systems, including healthcare, as a viable conceptual framework for conceptualizing and prediction in complex data/computer-human interface driven models such as diagonal queue medical image steganography and reservoir modeling and simulation (Jain, Patel, & Trivedi, 2017; Mamta, Anil, & Rishabh, 2017). Chaos theory, it is one of the arguments against activity theory in that dynamic systems have sensitive dependence on initial conditions and that the actions taken within a complex system of those conditions may yield widely divergent outcomes (Cottam et al., 2016; Juarez, 2016).

Cottam et al. (2015) argued if it is possible to integrate a collection of sub-units in an entirely logical manner that transitions from multiple to singular to eradicate outcomes that are entirely unexpected with the constraints for the design of the system. Chaos theorists would argue that CHAT's activity construct focuses on history that has evolved the current culture, community, and subjects, and that predictability and forecasting action in the future has too many variables to have reliable forecasting. Thus, the implementation of long-term strategies that may be necessary for an epidemiological approach to managing population health may lead to diverging outcomes or complex chaos. The counter argument to chaos theorists is that CHAT is grounded in historical roots but that it interlinks cross-disciplinary perspectives for analyzing human practices and developmental process for individuals or organizations to groups or inter-organizational networks considering social context and the dynamics and development of activities (Engström, 1999). CHAT, used as a conceptual framework, grows with the subjects and objects and is not limited to sensitive dependence on initial conditions as the framework can evolve with the subject, community, culture, and activities associated with an action to drive objects or outcomes.

Supporting Theory: Systems

Systems theory allows the leader to examine an organization or issue from a broad view permitting interpretation of patterns and events within parts of the organization and the degree to which such patterns and events interrelate to the organization. This theory relies on three constraints: (a) individual, (b) task, and (c) environment (Colombo-Dugovito, 2017). Bertalanffy (1945) developed systems theory with the underlying principle that the whole is a sum of parts that contribute to the overall

organism and that all systems act as a web of relationships among systems. Thus, systems are a group of interactive elements that are discernable from each other and the broader environment that operates within the parameters of its internal logic and is autopoietic (Colangelo, 2016). Systems are evaluated mathematically through the concept of isomorphism as applied to conceptual schemes and their mirroring of physical objects (Caws, 2015). A system may be open to input and output from its circular, self-referential modus operandi (Colangelo, 2016). This theory supports the interoperability and the subcomponents within all three generations of CHAT and the interconnectivity in CHAT-III with other activity systems through a shared object. Systems theory ties a single system to a cluster of systems and then to networks of clusters via analogies between elements of a system and cluster, and self-rationale of a system and the networks (Carayannis, Campbell, & Rehman, 2016). Each activity unit within CHAT is a component of the overall healthcare system, each can interact and contract, but each may also respond to stimuli in a various way. Systems theory allows for aggregation of multilevel systems that may stack in a specific way within a cluster or network (Carayannis et al., 2016). Systems theory's roots are traced to biology but have since transcended the boundaries of a single science and encompass hard science and abstract concepts such as innovation and research paradigms.

Systems theory is a framework used in multi- and interdisciplinary research and application including the healthcare industry. Within the social and economics industries, Valentinov and Chatalova (2016) successfully used systems theory to explain the regime of functional differentiation within two combined systems and found that social systems are operationally closed meaning sensitivity is limited to the environment

yet are metabolically dependent on it. This finding informs the institutional economics analysis of social dilemmas via the excessive intensity of economic incentives that yield the insensitivity of economic actors to their absolute dependence on the environment (Valentinov & Chatalova, 2016).

In business, systems theory has been used as a framework to study career development to expand on career theory and practice through unification and ability to review new patterns of relationships between existing theories and between theory and practice (Patton & McMahon, 2015). Patton and McMahon (2015) demonstrated systems theory to be a research tool, a learning tool, and an implementation tool forming parallels between CHAT and systems theory as both provide such a utilization opportunity. Systems theory has proven useful in healthcare as Badcock, Davey, Whittle, Allen, and Friston (2017) studied major depression combining free-energy principle and systems theory which allowed the researchers to evaluate brain function to explore depressed mood and clinical manifestations. Systems theory provides the framework for motor development research through a deep understanding of complex systems that create movement and has implications for autism spectrum disorder (Colombo-Dugovito, 2017). Badcock et al. used chaos theory to map the human brain to isolate different neurocognitive deficits that lead to depressed behavioral deficits. Volgger, Mainil, Pechlaner, and Mitas (2015) used a systems theory approach in the context of a cross-regional case study to compare health region developments designed to balance public and private stakeholders and found that the theory had useful sets of criteria to evaluate and judge regional development. Further, this study provides an account of the ability of this framework to consider the cross-functional and interdisciplinary application.

Though systems theory is a powerful tool to look at systems from a holistic level, it does not define the parameters of each system; rather, they are open for the researcher to define within systems. Systems theory does allow for the bidirectional flow of stimuli but does not account for a specific shared object, the historical influence of the decision process, or the culture in which the leader derives overt and covert influence. Due to the complexity of external stimuli from federal and private payors, the culture of healthcare within the triad of power, and the clinical altruistic ethic dynamic, defined systems to allow comparison, derive strategy and implementation practices systematically as found with CHAT-III is the better framework.

Contemporary Quality and Cost Measures of Healthcare in the United States

Two pieces of legislation that have had a significant impact on the contemporary healthcare landscape are the ACA and MACRA. The ACA mandated the DHHS to improve the health of all people and reduce the total disease burden. DHHS, under the ACA, aims to better the experience of care that is reliable, accessible, and safer, create healthy people and communities—requiring attention to behavioral, social, and environmental determinants of health (Cipriano, 2017; French, Homer, Gumus, & Hickling, 2016). The ACA also created the National Quality Strategy which includes a focus on managing population health and is reinforced in related frameworks such as the Triple Aim (Whittington, Nolan, Lewis, & Torres, 2015). This focus created a shifting focus outside of the walls of the clinic to include integration of the community to manage attributed populations health and reduction in cost associated with care delivery (Kapp, Oliver, & Simoes, 2016; Patrick, 2015; Venkatesh & Goodrich, 2015).

The ACA created the need for leadership to shift mental models to emphasize value over volume and optimize healthcare system performance (Schaum, 2017; Shirey & White-Williams, 2015); MACRA's pay-for-performance model further exacerbated this need. Under MACRA, eligible clinicians or clinical groups under a single Taxpayer Identification Number (TIN) can participate via one of two tracks: APMs, or MIPS (DHHS, 2017). The CMS, under the MIPS, assigns reimbursement penalties or incentives incrementally trending up from ±4% to ±9 by 2022 based on total scores under the four metrics as a series of weighted composite scores (CMS, 2017a; MACRA, 2015). In moving towards a quality-based reimbursement model, many healthcare institutions no longer have the luxury of remaining complacent, they must improve, they must manage populations with equitable care, they must produce quality, they must meet primary care needs, and they must do it cheaply (Tao, Agerholm, & Buström, 2016). Failure to do so results in reimbursement penalties (MACRA, 2015) for federal payors and reduces the ability of healthcare institutions with low quality or high cost to negotiate for maximum reimbursement with private payors. Scores are transparent and appear in the annual QRUR.

The QRUR is a CMS generated report that shows how the quality and cost of care delivered to Medicare patients compare with peer performance (Robertson-Cooper, 2015). The QRUR groups eligible solo practitioners and practitioners providing care under a single TIN and are also made available to practitioners and groups participating in the Medicare Shared Savings Program, the Pioneer ACO Model, and the Comprehensive Primary Care initiative of 2015 (CMS, 2016; Robertson-Cooper, 2015). The QRUR scatterplot is divided into four quadrants base on the level of quality and cost

per beneficiary, represents each solo provider or TIN, identifies the mean bands, and is used to calculate the value modifier. Thus, the QRUR is a predictor of performances under Medicare's Value-Based Payment Modifier (VBPM) which is the calculation used to adjust payments to TINs (Robertson-Cooper, 2015).

Under section 3007 of the ACA, the VBPM (may also be abbreviated by some to Value Modifier) provides differential payment to eligible solo practitioners and practitioners providing care under a single TIN under the Medicare Physician Fee Schedule (PFS) based on the quality of care furnished compared to the cost of care during a given performance period (CMS, 2017a). Calculation of VBPMs occurs at the TIN level; all penalties or bonuses apply to all providers under the TIN. Scores are calculated based on the submission of quality indicators under the Physician Quality Reporting System (PQRS) reported via the Group Practice Reporting Option and claims submission data (CMS, 2017a). The VBPM is computed via quality composite score summarizing a TIN's performance on quality measures, and a cost composite score is summarizing a TIN's performance on cost measures for attributed beneficiaries (CMS, 2017a). The result of the calculation yields the QRUR and assignment of penalty, natural, or bonus payment for the following year with bonuses and penalties being distributed evenly to ensure the reimbursement portion of the program remains budget neutral.

The QRUR report provides eligible solo practitioners and practitioners providing care under a single TIN an aggregate score of the value modifier and places them in relation to all other eligible solo providers and TIN's participating the in the MIPS arm of the QPP. The resultant scatterplot is represented in a single four quadrant graph demonstrating the aggregate distribution of providers and TINs as the dots, the average

range for all participants in isolated bands, and the division of quadrants based on quality and cost (see Figure 5). All data calculations and components that comprise the QRUR are publicly available in the CMS Data Archives as a PUF and were used to identify targets for this study.

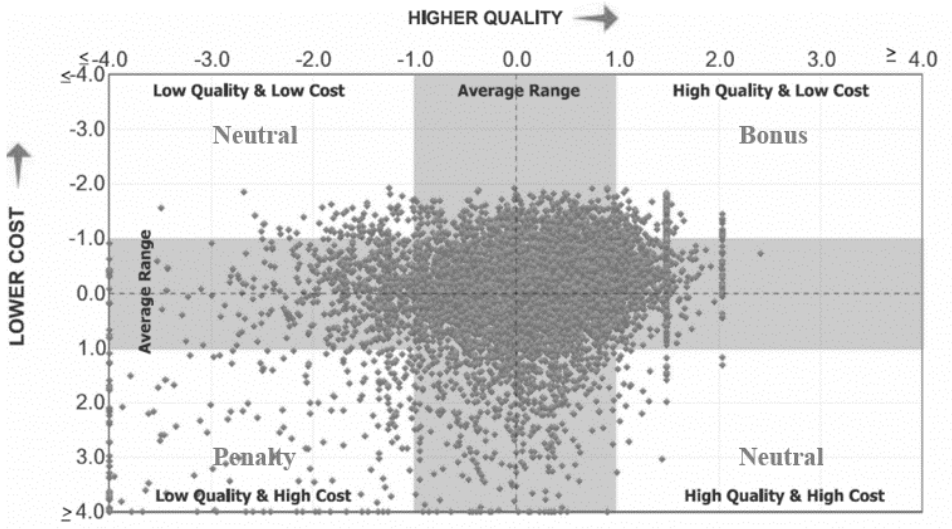


Figure 5. 2015 QRUR for all TINs reporting by quadrant and payment (CMS, 2016).

A pervasive measure of cost and quality in considering services offered is the value-based framework for global health delivery that measures the aggregate health outcomes achieved per dollar spent on the full cycle of care for a patient's health problem rather than the aggregate sum of discrete interventions or services (Cochran & Berkowitz, 2015). This measure is the methodology CMS uses to compare service lines when considering cost per treatment regimen (CMS, 2017a). In institutions with little resources available (i.e., cash on hand, technology, medical intervention services), often options are limited and shifting of cost or quality difficult. As leaders move forward in a contemporary environment where quality and cost are inseparable, it becomes critical to have the skill to, knowledge of, or counsel on both the clinical and business variables that

would stand to impact quality and cost per beneficiary measures to develop value-based service lines (Ronan, 2017).

Rising healthcare costs are increasingly eating into national budgets resulting in strategies being implemented to control costs through the more efficient use of resources in many first-world nations (Boudreaux & Vetter, 2016). The United States spends more per capita on healthcare than any other nation in the world yet ranks only 37th in the world for health status, and 42nd for life expectancy (Bartol, 2016; Dai, 2015). The improvement of the delivery and payment landscape in the United States healthcare system has been a focus for health reformers during the last two decades and has yielded transitions of accountability and reimbursement models (Bozic, 2015; Nix & O'Shea, 2015). The ACA's innovative payment models shifts of accountability for population costs to health systems and providers (Nathan & Dimick, 2016).

The U.S. national health expenditure (NHE) grew 5.8% in 2015 to $3.2 trillion, or $9,990 per person accounting for 17.8% of the United States GDP, and again by 4.3% in 2016 to $3.3 trillion, or $10,348 per person and 17.9% of GDP (CMS, 2017b; CMS, 2017c). Such growth is not new with the total national health expenditure with the most significant upward exponential deflection beginning in 1988 and continuing through 2016 (see Figure 6), and the national health expenditure per capita is continuing to follow an upward exponential arch disproportionate to the United States population growth which has remained relatively steady (CMS, 2017c). With baby boomers increasing in age, the United States Census Bureau predicts a total population of 20.9% aged 65 or older by 2050 (West, Cole, Goodkind, & He, 2014). A continued rise in the older population will increase Medicare spending, the national health expenditure, and the cost per beneficiary

ceteris paribus as an aging, multiple chronic care population, have higher complex care needs. Healthcare center leaders participating in either MIPS or APMs face an increasing challenge in successfully implementing strategies to lower cost and increase the quality of care in an aging and increasingly complex population.

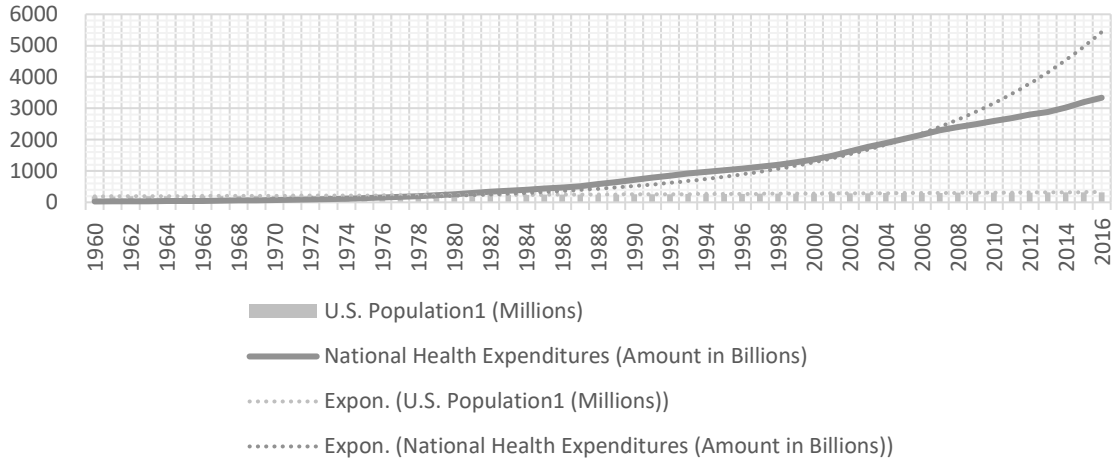


Figure 6. United States national health expenditure and population growth rates from 1960 to 2016 (CMS, 2017c).

In 2016, Medicare spending grew by 4.5% or $646.2 billion (20% of NHE), Medicaid grew by 9.7% to $545.1 billion, or 17% of NHE, while private health insurance spending grew 7.2% or $1,036.1 billion, or 11% of NHE (CMS, 2017a). Out of pocket spending grew 2.6% to $338.1 billion for U.S. citizens (CMS, 2017b). Hospital expenditures grew by 5.6%, physician and clinical services expenditures by 6.3%, and prescription drugs by 9.0% (CMS, 2017b). Shares of the total NHE include 28.7% by the federal government, 27.7% by households, 19.9% by private business, 17.1% by state and local governments, and 6.7% by other private revenues (CMS, 2017b). It is projected that the NHE will grow by a mean of 5.6% per year through 2025 and 4.7% per year on a per capita basis (1.2% GDP growth to 19.9% by 2025) while individuals with insurance

coverage is expected to increase to 91.5% by the same year (CMS, 2017b). The disease burden in the United States is projected to increase given a 45% growth in the geriatric population by 2050 and increase in co-morbidity, clinical complexity, and chronic care disease (Dall, Chakrabarti, Iacobucci, Hanasri, & West, 2013). Outpatient visits are projected to increase by 8-12% by 2025 (Dall et al., 2013). As visit utilization and complexity increase, efficiency, lean principles, and high-quality outcomes become future challenges for healthcare center leaders to produce high quality, low cost healthcare (Balbale, Locatelli, & LaVela, 2016).

As a result of growing cost, increasing health insurance coverage and hyper-utilization of expensive services such as the emergency department (ED) to manage chronic care conditions, a call for legislation was enacted to attempt to reduce financial hemorrhaging. The passing of the ACA instilled provisions that imposed a tax penalty of 1% on citizens filing individual taxes that did not have health insurance—repealed by the 2017 tax overhaul. In 2010 the percentage of individuals without health insurance coverage was 16% for all ages, age 18-64 was 22.3%, under 18 was 7.8%, and declined to 9% for all ages, age 18-64 to 12.4, under 18 to 5.1% in 2016 (Clark, Norris, & Schiller, 2017). The uninsured dropped again as a result of the ACA from 16% in 2010 to 9.1% in 2015 (Obama, 2016). The percentage of people who have a usual place to seek medical care has remained relatively stable from 1997 to 2016 ranging from 85% to 95% with a notable increase from 2014 to 2016 (Clark et al., 2017). Combining insurance coverage with increased access has led to an increase in outpatient visits (282.0 visits per 100 persons; 884.7 million total visits annually) in the United States (Centers

for Disease Control and Prevention, 2014). As visits increase, provider labor and availability become increasingly prevalent in management and healthcare center strategy.

In the United States, physician shortfalls are projected to be between 40,800 and 104,900 by 2030 with primary care ranging between 7,300 and 43,100 and non-primary care ranging between 33,500 and 61,800 (Dall et al., 2017). Higher visits with fewer providers may result in low quality, high cost outcomes for patients and place the healthcare center at risk for a penalty under the QPP; yet these influencing forces are part of the external network of activity systems that interplay with the shared object of high quality, low cost care. Strategies that manage both internal and external stimuli to manage population health may be critical in reimbursement risk mitigation strategy.

On the operational level, the goal of managing population health is to slow the progression of risk in a population while simultaneously minimizing cost utilization such as the emergency services (Hibbard, Greene, Sacks, Overton, & Parrota, 2017). EDs are considered outpatient facilities and providers and associated entities filing under a single TIN are subject to outpatient rules. ED visits and admission for acute exacerbation of chronic disease account for a disproportionate amount of the cost per beneficiary. EDs have 141.4 million visits per year (45.1 visits per 100 persons) with 11.2 million visits resulting in hospital admission, 1.8 million of which are critical care admissions (National Center for Health Statistics, 2014). ED hyper-utilization and hospital admission for acute exacerbation of chronic disease is a failure of the healthcare center setting to manage the patient's chronic care conditions effectively as a joint unit.

Hospital admission does not necessarily mean low quality or high cost. Lawson et al. (2014) examined colectomy patients in 169 hospitals (n = 14,745 patients) and

found the average hospitalization cost to be $21,350 (standard deviation of $20,773, median $16,092, interquartile range $14,341–$24,598) in line with standard costs. Within the sample, 34% of patients had postoperative complications or death (Lawson et al., 2014). Lawson et al. (2014) found high quality significantly correlated with lower cost (correlation coefficient 0.38, $p < 0.001$); of the hospitals classified as high quality, 52% were found to be low cost whereas 14% were high cost ($p = 0.001$), and 41% of low quality hospitals had a high cost. The ED and hospitalization add to the total cost of care delivery, raising the cost per beneficiary for the attributed provider in the outpatient setting and negatively impacting the cost score, thus the aggregate score for the reimbursement penalty calculation. Strategies that work with multiple external activity systems through a population health lens including partners like the ED, local hospitals, durable medical goods companies, and free clinics to devise a strategy on a collaborative community-driven effort are now critical in reducing the risk of reimbursement penalty for the healthcare center.

A Burning Platform, A Need for Change, and A Need for New Strategy

Changes in the healthcare industry are requiring practice managers to expand knowledge and modify management styles in preparation for five major trends that are affecting the business of healthcare. Rutherford (2017) outlined these five major trends as "quality as a criterion for reimbursement, regulatory control of fees and services, consumer influence on healthcare payments, [the] full disclosure of claims data (i.e., transparency), and increases in active patient load per physician" (p. 239). Creation of a climate for change as defined by Kotter in the healthcare environment requires the establishment of a sense of urgency—a burning platform, the formation of a powerful

guiding coalition, and the creation of vision (Teixeria, Gregory, & Austin, 2017). The pace of practice change over the past decade is significant, yet there is little in the way of documentation of the implementation of change in the industry (Teixeria et al., 2017). As payment systems change, leaders' rigidity and adherence to traditional views and practice may lead to dwindling fiscal sustainability as increasing penalties occur under MACRA for poor performance. The onset of the pay-for-performance models and the associated reimbursement penalty through federal payors, and ability to negotiate for maximum reimbursement from private payers have created the burning platform. The formation of a powerful guiding coalition requires essential identification of key stakeholders in the care environment.

Guiding coalitions of mixed clinical and business leaders allow for the psychological motivation and energy necessary for individuals to become engaged in the change process and allows identified leaders and followers to arrive at a consensus on the impacting issues (Maclean & Vannet, 2016; Teixeria et al., 2017). Continuous quality improvement and the constant need for change may require strategies for engagement and shifting of the core curriculum of future leaders and followers through educational entities with clinical staff being engaged in business decisions and allowed to be part of future strategies (Caron & Hooker, 2015). Partnerships between nursing academic institutions and healthcare systems are critical for the advancement of quality of care (Glazer & Sharp-McHenry, 2017). Academic nursing is not currently a partner in healthcare transformation with leaders recognizing this dissonance and calling for new strategies with insufficient resources being the most substantial barrier to the alignment of academic nursing (Glazer & Sharp-McHenry, 2017). This barrier to business and

clinical mixed guiding coalitions is not unique to nursing. Styhre, Roth, and Roth (2016) found that residents viewed leadership roles to inhibit knowledge acquisition that would make them a stronger clinician and drove them to divert from such roles; consequently, by not obtaining the skills of leadership and business, they continued to avert leadership roles in their careers. Styhre et al. suggested that merely having a curriculum or opportunity is insufficient; instead, the stigma must also be degraded to allow students the freedom to, at a minimum, begin to acquiesce into acceptance of their future leadership role. In building session planning and planning for future solvency, the building of guiding coalitions goes far beyond the today; rather, it requires a culture shift in both the Healthcare and Academic Industries towards a new vision.

The fundamental precondition for quality and cost improvement in a company is an understanding of the process and its regulation with regard to the goals and objectives that it should achieve (Holota, Hrubec, Kotus, Holiencinova, & Caposova, 2016). Creation of vision for the future of the healthcare industry may require a shared purpose in tandem with supporting organizations dedicated to effectively managing population health. Shared purpose is accepting responsibility for the enablement of others to achieve a shared goal in the face of uncertainty (Austin, 2016). As regulation on the healthcare industry remains fluid with advancing reimbursement risk under MACRA, there is a level of uncertainty that is driving the prevalence of managing population health and building on the community to manage quality and cost as the new vision of healthcare.

Shift to Managing Population Health to Manage Quality and Cost

The ACA and MACRA are both driving forces for the shift to population health strategies, but the increasing concept of corporate social responsibility is also a factor

with business cases resting on stakeholder's health (Macassa, Francisco, & McGrath, 2017; Whittington et al., 2015). Leaders of population health focus include outcomes, disparities, determinants, and risk factors within a community (Boudreaux & Vetter, 2016; Hibbard et al., 2017). Focus on these components of health are built on evidence that unmet basic resource needs, difficulty affording healthcare, medications, food, and housing contribute to worse healthcare quality indicators and the lack of specific provider knowledge regarding such factors exacerbates the decline in quality (Berkowitz et al., 2016; Gottlieb, Wing, & Adler, 2017; Kiran & Pinto, 2016). Managing a populations health then is interconnected with organizational interventions (culture/environment), provider interventions, and family and community resources with the population health process model sequentially including:

1. Population monitoring and identification
2. Health assessment
3. Risk stratification
4. Enrollment and engagement strategies
5. Communication and intervention delivery modalities
6. Patient-centered interventions across the health continuum
7. Impact evaluation across multiple short- and moderate-term outcome domains (Boudreaux & Vetter, 2016, p. 64)

Kapp et al. (2016) suggested holistic engagement is critical in managing modifiable factors to reduce chronic care potential, engage the patient in care participation, teach the patient about their conditions and options in a way they understand, and engage the patient in community recourses that support a healthy

lifestyle. Such engagement strategy would require the healthcare centers to develop community relationships and a lens of population health. Definitions of population health vary and remain nebulous, and strategies are unclear for how healthcare might contribute to the improvement of population health (Kapp et al., 2016).

Nonmedical strategies are critical to managing population health, and healthcare centers are predicted to expand nonmedical support services by 50% with 25% engaging community leaders to manage medical and social issues that impact health outcomes (Knoer, 2017). Hefner et al. (2016) expanded the view and definition of population health to derive clarity in that activities should extend beyond the traditional provider-based model and into community-based resources such as wellness registries and school-based clinics with leaders providing or planning for whole community care. Managing population health has traditionally focused on coordination of services from the physician's office and resources within the community for attributed populations.

The proliferation of Accountable Care Organizations (ACOs)—groups of physicians, hospitals, and other care providers that are organized and incentivized to increase quality, efficiency, and value in care delivery—have expanded this reach (Hefner et al., 2016). MACRA's innovative payment models in tandem with the ACA shift accountability for population costs to health systems and providers, increasing the number, viability, and need for ACOs (Nathan & Dimick, 2016). Community health is a complex, multifaceted, multidimensional puzzle in which the provider and healthcare center is but a single component. It is the summation of the activities by all constituent parts that make up an end-product. Traditional thinking with population health is no

longer enough in the pay-for-performance models, and healthcare institutions are in a unique position of power that drives corporate social responsibility. It is the influence of power that healthcare organizations have over communities that allow them to be in a position to drive social and community health change. It is through that power that healthcare institutions have a social responsibility to act not only as a fiduciary to the community, but to provide sustainable access to those in need (Macassa, Francisco, & McGrath, 2017).

Federal legislators ushered in a genuinely sustainable era of value-based reimbursement and placed greater financial risk sharing by providers through entwined cost and quality through MACRA (Boudreaux & Vetter, 2016). Population health management will play a critical role in physicians—and the facilities associated under the same TIN—successfully adopting and adapting to both governmental and nongovernmental payer initiatives (Boudreaux & Vetter, 2016). Several strategies have been successful in reducing the cost of care delivery while increasing the quality of care delivered (Hibbard et al., 2017). Strategies have included reduction of the use of targeted surgical procedures determined to be ineffective, overused or inappropriate, implementation of value-based cost-sharing where patients are encouraged to use providers, services, delivery systems, and medications with better-calculated value (Boudreaux & Vetter, 2016).

As legislation and subsequent regulation ties quality and outcomes of populations to cost and then to reimbursement and penalty association, it becomes critical to the business of healthcare to comply with clinical standards to ensure fiscal viability for the future. Gone are the fee-for-service days, the contemporary healthcare landscape holds

providers and medical institutions accountable for the quality of healthcare provided and the cost associated with care delivery. In are the days of managing populations wellness through population health initiatives. Population health management and integration into the culture of continuous quality improvement are achievable through a variant of continuous quality improvement initiatives including Plan-Do-Study-Act cycles. Managing an attributed populations health is critical to successfully achieving the Triple Aim (Boudreaux & Vetter, 2016).

A fundamental approach to cost reduction within ACOs is the concept of hot-spotting, or selectively identifying the highest-cost patients and working to reduce the cost per beneficiary as the top 1% of patients account for 20% of total expenditure, and the top 5% for 50% (Nathan & Dimick, 2016). A second approach common among ACOs to reduce cost is to take advantage of hospital variation in costs through selective referrals. By referring specific services to the lowest cost, highest quality facilities, the patient gets quality, low cost care, while creating a market of competition for those services.

Feldman et al. (2016) approached disease frequency from a bottom-up approach to identify pairs of diagnoses that differentiate population segments and focused on high and low-income individuals to offer insight into resource planning for targeted care within potentially resource-constrained environments. Feldman et al. found that chronic care comorbidities existed in nodal connections, and examination of networks of connected diagnosis for both low-income and high-income individuals contributes to better resource allocation distributions, and that looking at subgroups within a population may help in understanding how to best focus strategies that would improve health within

that subpopulation. In organizations that have minimal resources, wasted effort may yield a higher potential for low quality and higher cost, which increases the likelihood of reimbursement penalty under the QPP and lower negotiation power with private payers. Understanding the target and the complexities of that target that may contribute to poor outcomes may provide healthcare centers with the tools necessary to devise specific strategy within their community. Further, having the ability to identify such targets proactively is critical to reducing cost and driving quality care delivery.

Hibbard et al. (2017) sought to explore the Patient Activation Measure (PAM) to identify patients in the outpatient setting who have a higher likelihood of ambulatory care-sensitive utilization and future increase in chronic care disease. PAM scores correlate with changes in clinical outcomes and costs and measure the patients' self-management skills and confidence as well as the extent to which a patient has the knowledge and skills to perform self-management (Graffigna, Barello, Bonanomi, Lozza, & Gibbard, 2015; Hibbard et al., 2017; Rademakers et al., 2016). High PAM scores are a significant predictor of ambulatory care-sensitive utilization; low PAM scores are a significant predictor of new onset chronic disease (Hibbard et al., 2017; Roberts et al., 2016).

PAM scores offer insight into pre-habilitation targets with pre-habilitation defined as a physical and psychological assessment establishing a baseline functional level, impairments, and interventions that would promote physical and psychological health to reduce the incidence of or severity of future impairments (Silver, 2015). This coupled finding offers a viable option for the identification of patients that are likely to have high utilization and develop chronic care diseases in the future; both of which increase cost

and drive quality through patient activation. By identifying targets before cost occurrence, and activating patients to self-manage care, and providing those patients with rehabilitation efforts, cost avoidance and high quality outcomes are possible (Hibbard et al., 2017; Silver, 2015). This complex preventative approach takes strong leadership in a low quality, high cost, resource-dependent environment.

Healthcare Center Leadership in the Low quality, High cost, Resource Dependent Environment

Leaders in contemporary healthcare tend to fall into one of two schools of thought, healthcare is purely clinical, or healthcare is a business. As physician's—who tend to fall in the clinical camp—step into leadership roles, they often lack skill, training, or the inclination to lead; more, their ethical principles for clinical care may impede them from driving fiscally sustainable businesses (Quin & Perelli, 2016). As the frequency of clinical leaders increases in the heatlhcare center setting, the altruistic ethic taught by clinical institutions where the provider or nurse is the only patient advocate, and the utilitarian view of epidemiological medicine that is needed to minimize reimbursement risk, may place the clinical leader at philosophical odds (Krupat, Dienstag, Kester, & Finkelstein, 2016). The internal struggle lies in their need to be an advocate for the patient, and the need to be an advocate for the business (Styhre et al., 2016). It is this polarized culture that drives the actions of individuals in healthcare center leadership and may contribute to most healthcare centers falling outside of the high quality, low cost quadrant of the annual QRUR and struggle in the face of legislative change.

Clarke, Norris, and Schiller (2017) contended that government regulations and population health modeling had unified operational planning and strategy within the

healthcare center setting. Without consideration of both the intended strategy and the operational requirements that are necessary to implement, healthcare organizations fail to thrive in the new era (Clark, 2017). Combining this concept with that of clinical care and clinical leadership may present a unique challenge to some leadership structure. Chief executive officers and their boards are typically in their positions due to a record of accomplishment of financial literacy and with meeting statutory reporting standards; yet, often these leaders lack health outcomes literacy (Sidorov, 2015). Such a lack of knowledge places the company at risk of leaders being unfamiliar with descriptive clinical jargon and with the reliance of population health decision making and reporting falling into the hands of a small number of employees to get health reporting correct consistently (Sidorov, 2015). The increasing availability of the electronic health record has led to the ability of big data generation; thus, the ability to consolidate, understand and focus on the prevalence of specific diseases within a given population (Feldman et al., 2016). Under the ACA and MACRA, such data is made transparent and available to the public (i.e., Hospital Compare) with evidence demonstrating such data stimulates quality improvement activity and mediates patient's selection of their provider (CMS, 2017a; Manning et al., 2017).

Selection of market substitutions yields opportunity cost for the institution. As all population health delivery and big data are now discoverable, top executives that lack descriptive clinical jargon, or rely on others to focus health reporting within the organization may be at higher risk for failure to implement population health, increase clinical quality, or lower cost per capita with their specific population or report fraudulent outcomes due to increased pressure and fiscal sustainability rationalization. Leaders may

need to shift how they lead to ensure successful implementation of a strategy to reduce reimbursement risk. Utilization of careful planning and execution techniques allows institutions to maximize revenue, reduce expenses, grow their practices, manage risk, and increase patient and employee satisfaction (Clark, 2017). The transition from the analytics phase to the implementation phase in CHAT-III requires both planning and execution with strong, yet flexible, leadership styles to ensure closure of the implementation gap.

Boundary Spanning Leadership (BSL) is a leadership style that is an example—though not exclusively—of a strong, yet flexible leadership style proved to drive successful strategy implementation. BSL practices may be leveraged by healthcare center leaders to close the gap to the Triple Aim and include buffering, reflecting, connecting, mobilizing, weaving, and transforming (Shirey & White-Williams, 2015). Shirey and White-Williams (2015) suggested that addressing management of population health focus on prevention and health promotion through the creation of multisector partnerships, tapping into stakeholder resources, and exploring community-based support to facilitate health-related behavior changes. As health reimbursement becomes increasingly based on population health and outcome, social determinants are increasing in focus, and team-based care is on the rise (Tobin-Tyler & Teitelbaum, 2016). Social determinants of health are inextricably woven into health management and affect individuals and population health, yet many stakeholders in healthcare have ignored or undermined the extent to which they have an impact on total outcomes (Tobin-Tyler & Teitelbaum, 2016). There are increased opportunities for integration of ancillary services in tandem with medical education in the contemporary environment. Medical-legal

partnerships embed civil legal services into the spectrum of health services—especially for low-income and vulnerable patients and communities (Tobin-Tyler & Teitelbaum, 2016). Partnerships are increasingly critical to sustainable healthcare delivery in limited-resource environments where resource share and care teams are integral to quality outcomes.

The contributions of both the Triple Aim model and BSL yield attention to three primary focuses, managing boundaries, forging of common ground, and discovery of new frontiers. As community resources and individuals engage as part of population health, such focuses may become critical for the reduction of cost per capita and total outcomes. Furthers, leaders must be cognitively aware that social and organizational factors for teams and leadership compound complexity and create variability with the ranks (Sims, Hewitt, & Harris, 2015). In extending leadership beyond the walls of the healthcare center and into the community to reduce cost and increase quality through shared resources and activity systems, leaders need to focus on shared purpose, critical reflection, innovation, and leadership to ensure the highest possible outcome with multi-divisional and multi-institutional partnerships (Sims et al., 2015). Implementation of proven strategy is a complex system. Strong and flexible leadership is needed to transition understanding of the components outlined by CHAT-III analysis to implementation.

Healthcare Strategy: Promoting Action on Research Implementation, Cost, and Quality

In 2018 the cost of healthcare delivery will be calculated as 10% of the aggregate score under MIPS and will increase to 30% in 2019 for both MIPS and APMs and are

reported via the QRUR (CMS, 2017a). The three criteria for performance are Medicare spending per beneficiary (includes the VBPM), total per capita costs, and condition and treatment episode-based measures (CMS, 2015). Medicare spending per beneficiary assesses Medicare Part A and B costs associated with an episode—a unit of care provided. An episode includes the dates falling between three days before an Inpatient Prospective Payment System hospital admission (index admission) and thirty-days posthospital discharge with Medicare spending per beneficiary evaluating for the delta between the observed cost of episodes against expected costs (CMS, 2015). The total cost of care and the associated quality of outcome for the patient is a complex amalgamation of various components of healthcare that include inpatient and outpatient spending on logistics and clinical full-time equivalents, population health management and community resources, the concept of total quality management, and the patient's ability or desire to adhere to a care plan set by the care team.

Logistics within the hospital division account for 30% to 40% of the total annual budget when considering spending per beneficiary the total cost of care for healthcare centers include all services rendered by services external to the group in addition to all associated costs for outpatient care delivery. Many healthcare center leaders may lack strategy that would enable them to deploy a lean logistics model, and the current state of healthcare logistics tends to distribute actions among multiple departments and clinical staff (Landry, Beaulieu, & Roy, 2016). Retention and perpetuation of strategies that would limit the cost reduction at the point of logistics may be a contributing factor to higher associated cost and in the healthcare center sector lead to decreased patient retention which in turn may lead to hyper-utilization of the emergency room, thereby

increasing the cost to the attributed provider or provider group. Feibert and Jacobsen (2015) found that performance measures for logistics are critical in managing and controlling logistics, at the heart of which is a framework for decision making and track and trace technologies; Randall et al. (2015) noted the increasing use of performance-based logistics in multiple industries including healthcare.

Laundry, Beaulieu, and Roy (2016) identified three primary strategies that have proven to reduce logistics costs for healthcare institutions in a longitudinal case study: (a) avoidance of the quick win tool-based approach in lieu of long-term reflection and creating of space for emergence to occur, (b) selection of strategies to deploy with strategic intent rather than benchmarking and copying other institutions, and (c) utilization of external resources or new materials managers to take a fresh approach to logistics issues. Such strategies may be critical to the success of a holistic strategy to minimize the risk of reimbursement penalty, and this study may assist in identifying how some healthcare center leaders have closed the implementation gap from research to implementation.

Clinical quality indicators outlined by MACRA represent 60% of the total aggregate score to assess for penalty or incentive payments for the following calendar year, moving to 50% in 2018 to account for the 10% increase in the cost measure (MACRA, 2015). Most quality indicators are expected to be managed by primary care. Primary care demand is increasing sharply in the United States due to an aging population, yet there is a shortage of primary care providers to meet the demand (Brislen, Dunn, Parada, & Rendon, 2016; Morgan, Himmerick, Leach, Dieter, & Everett, 2017; Petterson, Liaw, Tran, & Bazemore, 2015). Utilization of midlevel providers is a means

by which healthcare institutions may increase the provider availability and reduce total cost of full-time clinical equivalents (Alsharif, Potts, Laws, Freire, & Sultan-Ali, 2016; Senqupta, Small, Smoot, Lopez-Plaza, & DiGiovine, 2015).

Realization of the quality increase and cost reduction potential, many states are beginning to relax the supervision and prescriptive authority laws to increase utilization and allow a broader range of services at lower associated cost (Johnson, 2015). Physician Assistants (PA) are often a class of provider that may be tapped to fill the gaps in primary care, but PAs are practicing in primary care have declined from 50% in the 1990s to 30% in 2013 (Morgan et al., 2017). Another option for healthcare institutions for midlevel providers is the advanced practice registered nurse (APRN). The American Association of Nurse Practitioners (2017) reported 234,000 APRNs licensed in the United States, 49.9% of which hold hospital privileges, 11.3% long-term care privileges, 89.2% certified in an area of primary care, 3 in 4 are accepting new Medicare patients, 77.9% new Medicaid patients, and they average slightly over 3 patients per hour. Seeking alternative providers that are lower cost full-time equivalents may allow healthcare institutions to not only provide the necessary access to primary care to meet the clinical quality indicators but also lower the cost of that delivery and reduce the penalty risk under MACRA.

Transition

Section 1 focused on the current healthcare environment, legislation, conceptual framework, and closure of the implantation gap from research to action. The contemporary healthcare environment is one of shifting responsibility and increasing accountability with rising patient volume and cost without a significant rise in quality.

The QPP, under MACRA, places a significant portion of healthcare centers reimbursement at risk setting the need for proven strategies for healthcare center leaders to initiate to reduce such risk. CHAT-III was discussed as a viable conceptual framework for the analysis of proven strategy and as an implementation platform for healthcare center leaders falling outside of the high quality, low cost quadrant of the QRUR. Translating strategies into action may be a two-pronged approach where strategy mix is selected appropriately matched to resources, and closure of the research to implementation gap. Section 2 contains a restatement of the purpose of this study, the role and ethical obligations of the researcher and an in-depth description of the research method and design. Procedures are outlined in detail and include data collection and analysis as well as evaluations of the validity and reliability of the study. Section three contains a presentation of findings and their application to professional practice, along with an explanation of the implications for social change and recommendation for actions and future research. Section 3 concludes with reflections and a detailed explanation of the conclusions drawn.

Section 2: The Project

Section 2 contains a detailed examination of the role of the researcher, the qualitative research method, and the multiple case study design. A justification follows for the participants and population along with explanations of the ethical practices of research, data collection instruments, techniques, and organization. Section 2 ends with a discussion on analysis techniques and an explanation of the reliability and validity of the study.

Purpose Statement

The purpose of this qualitative multiple case study was to explore strategies that successful healthcare center leaders have used to mitigate the risk of reimbursement penalties under MACRA's QPP. The targeted population sample comprised six healthcare center leaders in physician practices in the United States who had been successful in reducing the risk of reimbursement penalties per MACRA's pay-for-performance model based on the 2016 QRUR scores from the 2015 performance year. Improving the quality of healthcare and reducing the cost of delivery of that healthcare has positive social change implications by providing better outcomes at a lower cost to the patients within the communities the healthcare center serves and by reducing access-based mortality rates (Watters et al., 2015). Facilities in rural areas—where healthcare may be provided by a single entity—in the United States that depend on at-risk revenue under MACRA, and have the highest newly insured patient populations under the ACA; could benefit from the results of this study by increasing fiscal sustainability, ensuring continued high quality healthcare delivery to the communities they serve.

Role of the Researcher

An individual possessing a clear perception of their weaknesses, strengths, emotions, motivations, thoughts, and beliefs, which gauge their perception of attitudes, actions, and responses defines self-awareness (Finlay, 2002). The academic researcher has a responsibility and duty to the core values of reciprocity, respect, equality, responsibility, protection, and integrity (Nilson, 2017). It is paramount that researchers develop and maintain the capacity to be reflexive and identify any stereotypical assumptions or idiosyncratic concepts that may be inherent to their beliefs, epistemology, or ethics (Nilson, 2017). Failure on the part of the researcher to become self-aware of these competencies may influence or otherwise alter the purity of the research through all phases (Finlay, 2002).

The role of the researcher during the data collection process of a multiple case study using semistructured interviews is to assure the reliability and validity of the protocol while integrating real-world events with the needs of the data collection plan (Yin, 2018). In this study, my research practices remained within the parameters of the protocol, exhibited unwavering reflexivity, and demonstrated an understanding of and control over self-awareness variables that may diminish the purity of reported findings (see Nilson, 2017; Yin, 2018). Further, control, as allowable during the interview process, remained a pillar because open-ended interviews that are in situ may deviate from protocol if allowed. I also adhered to all requirements of the Walden University Institutional Review Board whose focus is to "formalize and reiterate the institution's commitment toward promoting impeccable scientific and ethical standards in patient care, professional education, researcher, and community services" (Desai, Howaldar, &

Divatia, 2017, p. 145). Familiarity with the topic, participants, or research area may influence data collection and methodology. I have nearly two decades of experience in the healthcare industry with both clinical and business backgrounds within inpatient and outpatient services and have held operations positions in which the strategic development for MACRA measures is a core responsibility. Having worked in this field, my perception of the need for quality improvement and cost reducing strategies aligned with what the data indicated in the QRUR.

In the healthcare setting, professionals have a responsibility to act ethically in all parts of care and professional life; however, in most cases, it is *only* when they are researching that they must obtain explicit ethical permission to do their work (George, 2016). For this reason, some may see research ethics as an exercise in getting regulatory clearance and not as an exercise in performing research to the highest ethical standards (George, 2016). Heavy regulation of human subjects research within the biomedical and behavioral industries is a result of multiple incidents of unethical practices on human subjects in the name of scientific advancement (George, 2016). The National Research Act created the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research with the charge of developing ethical standards for research using human subjects (Department of Health, Education, & Welfare, 1979). The commission considered the boundaries between biomedical and behavioral research and accepted medical standards, the role of assessment of risk-benefit criteria in determining the appropriateness of research involving human subjects, appropriate guidelines for selection and participation, and the nature and definition of informed consent (Department of Health, Education, and Welfare, 1979). The result was *The Belmont*

Report which drew upon several previous examinations of unethical human subject research practices, specifically the Nuremberg Trial and the Tuskegee Syphilis Study (Harrison & Gannon, 2015) and set the standard ethical principles for human subjects experiments. Noting the potential for unethical practice in the healthcare industry and with *The Belmont Report* in mind, I had an ethical responsibility to perform to the highest standards with respect for persons, beneficence, and justice through the concepts of informed consent, assessment of risks and benefits to the subjects of the study, and to the selection of subjects for the study.

Critical to the success of justified belief for the researcher is the capacity to be reflexive and through self-awareness, identify any stereotypical assumptions or idiosyncratic concepts that may be inherent to their beliefs or concepts of ethics (Nilson, 2017). Especially in the case of semistructured interviews, where the research occurs in situ and protocols outline the parameters of the study during the data collection process, the researcher must demonstrate an understanding of and control over self-awareness variables that may diminish the purity of reported findings (Nilson, 2017; Yin, 2018). Case study researchers are particularly prone to bias via the use of a study to substantiate a preconceived position due to the need to understand the issues beforehand, and such an understanding may undesirably sway the researcher toward supportive evidence and away from contrary evidence (Yin, 2018). Two checks assisted in the mitigation of internal bias on my part as the researcher in this study, (a) critical colleagues considered to be subject matter experts reviewed preliminary findings and (b) bracketing. Yin (2018) suggested reporting preliminary findings during the data collection phase to critical colleagues may reduce bias by forcing the researcher to view the research from an

external lens and by allowing the possibility of alternative avenues to reduce bias further. The manuscript of this study was consistently subjected in entirety to such scrutiny through both the peer review and approval structures. Bracketing is the concept of actively reducing the researcher's potential for bias through existing experience, knowledge, or bias by setting aside assumptions and developing a new level of understanding within the subject matter through the evolution of the study (Chan, Fung, & Chien 2013; Overgaard, 2015).

My use of an interview protocol in this study further reduced bias and allowed for a more uniform data collection process. Interview protocols allow for a higher level of standardization of interactions between the participant and the researcher during the data collection process to ensure that data collected are in line across all participants in all cases (Bond et al., 2014; Yin, 2018). Protocols set expectations for both the researcher and the participant and define the parameters by which the researcher shall collect data sets (Castillo-Montoya, 2016; Yin, 2018). Further, methodological triangulation increases credibility and trustworthiness within the study; member checking increases accuracy (Birt, Scott, Cavers, Campbell, & Walter, 2016; Yin, 2018). Methodological triangulation assisted in the protocol design; I offered member checking to ensure the capture of accurate participant responses and meanings through the use of the interview protocol in this study.

Participants

Essential topics related to the selection of participants are (a) work with samples or include the entirety of the reference population, (b) sample frame, (c) sampling process, and (d) potential effects of nonrespondents on the study results (Martinez-Mesa,

Gonzalez-Chica, Duquia, Bonamigo, & Bastos, 2016). Martinez-Mesa et al. (2016) defined a sample as a finite subset of participants pulled from the target population, in turn, the target population corresponds to the entirety of the subjects whose characteristics are in line with the interests of the research. The frame of participants in this study was healthcare center leaders that had demonstrated success in minimizing the risk of reimbursement penalties under MACRA's QPP model based on the annual QRUR from 2016. Participants had to fall within the high quality and low cost quadrant for that year (see Figure 7). Participants also had to have played a leadership role in the formation of strategy and the implementation of such a strategy to be included in the study.

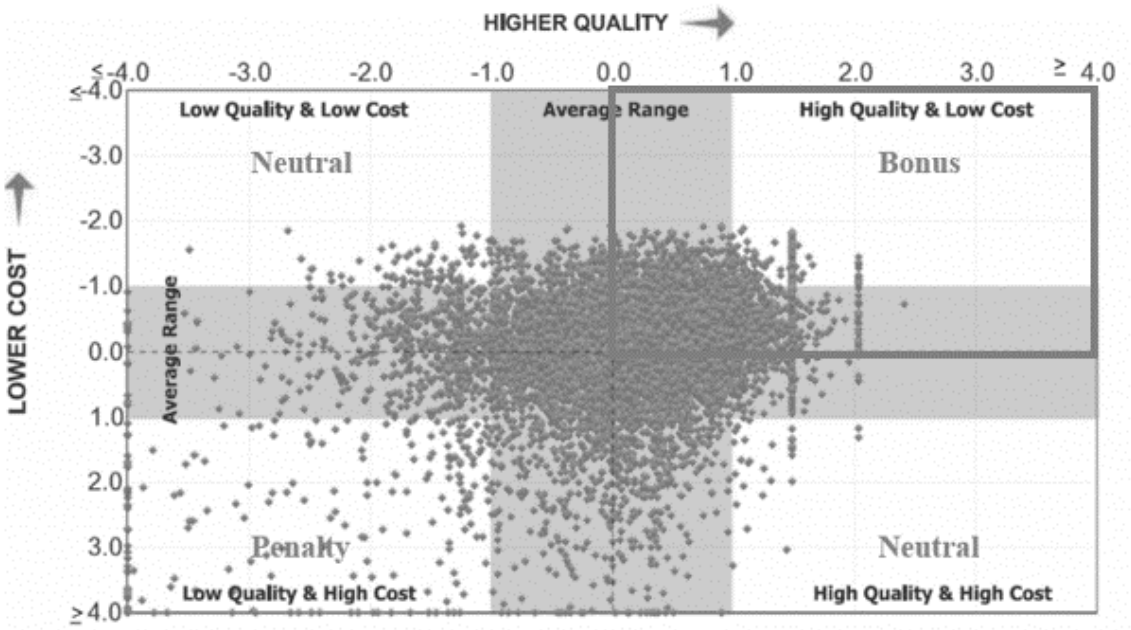


Figure 7. Annual QRUR with participant inclusion quadrant demonstrated (CMS, 2016).

The QRUR includes all individual providers and TINs participating in the QPP in the United States (CMS, 2016); therefore, the inclusion of the total population from this

quadrant was not possible. Working with a sample was a feasible option. As my intent in this study was to demonstrate strategies that had been proven to increase the quality of care delivery and decrease cost per capita, non-probabilistic, purposive sampling was appropriate. Purposive sampling is a non-probabilistic sampling technique that targets included participants when a diverse sample is necessary, or the opinion of experts within the research interest is needed (Martinez-Mesa et al., 2016). Six potential participants from the high quality, low cost quadrant of the QPP were included in this study to ensure ideal non-probabilistic purposeful sampling (see Palinkas et al., 2015; Yin, 2018). Nonrespondents within the population may have additional strategies to minimize reimbursement risk under MACRA's QPP and is an opportunity for future research.

After receiving approval from the Walden University Institutional Review Board (IRB# 06-12-18-0674812), I asked the target participants to volunteer for a face-to-face, phone, or video conference. As MACRA strategy may not be consistent with a single leader type (i.e., clinical quality/risk, operations, clinical administration) identification of the leaders responsible for development and implementation of such strategy was critical to the selection of leaders within the TIN target. Upon agreement and consent to the interview process, the leader received an e-mail containing a participant consent form and a letter of cooperation. The Informed Consent Form contained explicit instructions to read, sign, and return the participant consent and to return the letter of cooperation with an authorized signature no later than 2 weeks from receipt to be included in the study. The participant consent form included an introduction, an outline the purpose of the study, a description of the study procedures, an explanation of risks and benefits of participation, a confidentiality clause, an explanation of the right to refuse or withdraw,

an explanation of the right to ask questions and report concerns, and a signature for consent.

The interview is a standard in qualitative research and requires a certain degree of trust between the interviewer and the interviewee (Bauman, 2015; Gooch & Vavreck, 2016). To effectively develop rapport Ryan and Dundon (2008) suggest five stages:

1. Opening the interview: The researcher has responsibility for clarifying and selling the project to the interviewee and establish mutualistic and realistic roles. The researcher may establish a rapport through non-agenda discourse and the inclusion of positive social interaction.
2. Searching for common ground: The researcher furthers the rationale for their focus to ensure the actual benefits of the research for the respondent become realized. Offering to share findings may be a way of establishing this stage.
3. Establishing empathy: The researcher seeks to build on the newly established bond with the interview to develop commonality and empathy to establish a relaxed atmosphere and a higher degree of confidence for the interviewee.
4. Embedding rapport: As the interview begins to uncover much deeper interpretations of social or contextual meaning, the researcher -respondent relationship may shift creating the need to touch back with established rapport. It is critical to ensure to control the possibility of over-rapport because this may lead to the interviewee attempting to provide what they think the interviewer may want to hear instead of presenting reality.
5. Closing the interview: Due to opportunities after the interview, the researcher may wish to continue discourse; this is possible through gratitude for the data

provided. The researcher must not merely switch off as the interview comes to completion, but rather, remain sensitive to the leads and signals for future data opportunities. Further reinforcing the sharing of information upon study completion closes the interview with an open invitation for further conversations demonstrating a benefit for both parties.

Through following these recommendations at each stage of the interview and with my existing medical and business languages capabilities, the interviews were conducted with both commonality and rapport. Further, I clearly explained the option for the participant to refuse to answer any specific question asked and their ability to terminate the interview at any point and the appropriate steps for doing so in the preamble to the interview, the participant consent form, and the letter of cooperation. Verification of understanding was recorded both verbally and in writing via consent.

Research Method and Design

In any field of science, it is essential to ensure the appropriate methods and procedures are reasonably applied to effectively lead to the realization of the defined task set (Magruk, 2015). Research methodology falls into three categories: (a) quantitative, (b) qualitative, and (c) mixed method, all of which are systematic approaches (Bhaskar & Manjuladevl, 2016). Appropriate selection of each method is dependent on the context of the study and the functions the method is needed to do (Magruk, 2015). In the case of this study, qualitative methodology was appropriate using a multiple case study design.

Quantitative research is grounded in the belief that objective measurements are independent of the environment or the researcher, thus removing contextual factors from the measurement situation (Polit & Beck, 2017). As a strategy for high quality and low

cost consists of a multitude of specific contextual factors within the structure of the company and community, removing them may hinder replication, universality, and transferability. Quantitative research requires the researcher to devise and test a hypothesis to analyze specified dependent variables and correlation (Babones, 2015). As I sought to explore strategies to minimize reimbursement risk under MACRA's QPP with special consideration to the cultural and historical environment of activity systems, the quantitative methodology which removes contextual factors and tests causal inferences and the correlation was not appropriate.

The constructivist researcher seeks an understanding of the world of human experiences continuously evolved through human interaction with mediating artifacts and other subjects (Mojtahed, Nunes, Martins, & Peng, 2014). Qualitative researchers seek to explore the *how* or *why* of a given event, activity, or phenomenon (Dodgson, 2017; Yin, 2018). As I sought to explore *how* some healthcare center leaders have obtained placement in the high quality, low cost quadrant of the QRUR through a strategic lens, a qualitative method was appropriate. Constructivist epistemological researchers using an inductive approach typically focus on qualitative research methodologies that are interview-based, with interpretivism approaches in line with both the constructivist and inductive concepts (Mojtahed et al., 2014). Utilization of a semistructured interview within the principles of constructivist and inductive concepts allows for inference from the specific to the general yielding the ability of the researcher to see the emergence of commonalities and themes. Such an approach was appropriate across a platform of institutions that may have resource variance within risk mitigation strategy under MACRA's QPP. Further, utilization of CHAT-III as a conceptual framework allowed

consideration of the existing culture and historical trends within the institution that may allow for the emergence of barrier trends that had to be overcome to close the implementation gap. Such findings may be invaluable to replication and universality of identified strategy themes.

Researchers employing the mixed methods approach gather and analyze data through both quantitative and qualitative designs sequentially or concurrently and may yield complexities within the study and the benefits of a multifaceted approach to a single question (Huan-Niemi, Rikkonen, Niemi, Wuori, & Niemi, 2016; Sparkes, 2014). As there is no test hypothesis, dependent variables are not a factor, and contextual factors are critical to the exploration of strategy (Babones, 2015; Polit & Beck, 2017), the mixed methods approach which utilizes quantitative designs in parallel with qualitative designs was not appropriate. By ruling out both quantitative and subsequently mixed methods approaches, the qualitative methods stood as the most logical approach.

Case study, phenomenology, and ethnography are examples of qualitative designs used by the researchers in mono-method or multi-method studies (Roberts & Castell, 2016). Phenomenological inquiries require a method that makes an inquiry of an object to disclose a priori structures of consciousness within a phenomenon (Englander, 2016). The phenomenological study design is used to explore the essence of an event, activity, or phenomenon to define meaning identified by participants (Dodgson, 2017). This research was not concerned with conscious experiences (i.e., perceptions and emotions); therefore, a phenomenological design was not appropriate. Ethnography is the systematic study of cultures and the people within the culture (Polukhina, 2015). The culture was

considered in this research as an element but was not the primary focus; therefore, it was not an appropriate design selection for this study.

Yin (2018) argued that though there is no formula to the selection of design, a case study is appropriate in the exploration of a present circumstance (i.e., how or why a phenomenon works) and becomes increasingly relevant if the research question requires an extensive and in-depth description of a phenomenon. The intent of this study was an exploration of strategies that some healthcare center leaders used to minimize the risk of reimbursement penalties under the MACRA's QPP. The focus of the research in this study was contemporary strategies in a rapidly evolving environment and industry; the research does not require the control of behavioral events; thus case study was appropriate (Koivu & Hinze, 2017; Yin, 2018).

Multiple variables account for a given strategy formation and implementation, including the historical trends of the organization, the business, academic, and medical culture of the healthcare center, and the resources available to implement. This point was supported by Yin (2018) as, "The rationale for multiple case designs derives directly from [an individual's] understanding of literal and theoretical replications" (p. 61). Type 3 embedded multiple case study design was appropriate for this study as a selection of two or more cases believed to be literal replications—in this case, high quality, low cost—in relation to the set of evaluative questions outlined in the semistructured interview allowed an exploration of *how* and *why* a particular intervention had been implemented to yield the desired outcome. Type 3 multiple case studies allow for consideration of individual cases and their contexts while also considering each case within the whole (Yin, 2018); in the case of this study, multiple healthcare centers (single

TIN) within the regulated industry as a whole (Palumbo, Annarumma, & Musella, 2017). Pooling of healthcare centers did not occur across cases. Thus an embedded design was appropriate. In identifying both strategy and diving into the implementation and environment of implementation, literal replication of the conditions may be possible for other leaders in healthcare centers to achieve the high quality, low cost quadrant of the QRUR.

Assumed saturation occurs when no new relevant information occurs by the addition of participants (Marshall & Rossman, 2016). Six potential participants from the high quality, low cost quadrant of the QRUR were included in this study to ensure ideal non-probabilistic purposeful sampling (Palinkas et al., 2015; Yin, 2018). Additional participants were not required to attain saturation; however, it should be noted Fusch and Ness (2015) found saturation occurs more rapidly in smaller studies as compared to larger ones. Though this study is over a large geographical footprint, the study targets represented a small sample of the larger population. Data saturation occurred once the participants failed to yield any new contributions to understanding or themes (Marshall & Rossman, 2016). I knew that data saturation had been reached when no additional evidence or information was discovered related to my research question (Ragab & Arisha, 2014). Data saturation was achieved by asking six healthcare center leaders predefined open-ended interview questions and comparing the answers to those questions until the leaders presented no new contributions to understanding or themes.

Population and Sampling

Population

A sample is a finite subset of participants pulled from a targeted population, in turn, a targeted population comprises of the entirety of the subjects whose characteristics are in line with the researcher's study interests (Martinez-Mesa et al., 2016). The population of this study was healthcare centers within the United States that participate in the QPP under MACRA with an allowance of both solo practitioner and group practitioner TIN paradigms. Purposive sampling is a nonprobabilistic sampling technique that targets participants when a diverse sample is necessary, or the opinion of experts within the research interest is needed (Martinez-Mesa; et al., 2016; Palinkas, 2015). Due to the exceedingly specific sample within the population, purposive sampling was appropriate. Purposeful sampling inclusion criteria included; (a) study targets were healthcare center leaders within the high quality, low cost quadrant of the 2016 QRUR (see Figure 6), identified in the CMS PUF; (b) participants were individuals that had active knowledge and participation in increasing quality and reducing the cost of care delivery strategy within the heatlhcare center; and (c) participants were healthcare center leadership within the United States. Six potential participants from the high quality, low cost quadrant of the QRUR were included in this study to ensure ideal non-probabilistic purposeful sampling (Palinkas et al., 2015; Yin, 2018). It is of note that Marshall et al. (2013) suggested additional participants may be required to ensure saturation suggesting 11 to 16; however, Guest, Bunce, and Johnson (2006) argued saturation might occur with less than six participants.

Sampling Method

In qualitative research failing to provide adequate justification for sampling decisions compromise the credibility of the study (Marshall & Rossman, 2016). Common forms of nonprobability sampling methods include purposive, snowball, quota, and convenience (Blackstone, 2012). Purposive sampling is a nonprobabilistic sampling technique that targets included participants when a diverse sample is necessary, or the opinion of experts within the research interest is needed (Martinez-Mesa et al., 2016). This sampling technique begins with a specific perspective in mind that the researcher wishes to examine and then seeks out participants who cover the full range of perspectives (Blackstone, 2012). The research of this study focused on two vital elements of MACRA's QPP, quality of care delivery and cost which level sets reimbursement risk for all healthcare centers. The specific perspective sought was of those that have successfully landed in the high quality, low cost quadrant of the QRUR. Thus purposeful sampling was appropriate for this study. It is worth mentioning that purposeful sampling may allow the researcher to reach data saturation with limited generalizability in that strategy found as a result of this study may not reflect *all* strategies available or possible (Palinkas et al., 2013).

Snowball sampling begins with the researcher knowing one or two people but then relies on those participants to provide access to additional participants and so on (Blackstone, 2012). Snowball sampling is prone to selection bias (Sedgwick, 2013), and as the QRUR identifies potential targets within the high quality, low cost quadrant, this sampling method was not appropriate for this study. Quota sampling occurs when the researcher selects cases from within several different subgroups based on pre-identified

categories with minimal variation (Srimulyani, Rustiyangsih, & Kumiawati, 2016). Quota sampling was not appropriate as select targets within a single quadrant of the QRUR, and single target healthcare centers were inclusion criteria for this study. Convenience sampling is a technique in which the researcher selects participants that are more readily accessed (Blackstone, 2012). In the case of this study, this would have limited the geographic footprint causing a limitation, and there are no institutions in the immediate area that meet the inclusion requirements of this study; as such, convenience sampling was not possible.

In inductive qualitative research, the sample size is dependent on data collection and analysis in that size is determined by the point at which no new codes or concepts emerge (van Rijnsoever, 2017). The point at which no new stories and no new codes that would signify new properties of uncovered patterns emerge is the saturation point (Hennink, Kaiser, & Marconi, 2016). Researchers aiming for saturation may rely on purposive sampling (van Rijnsoever, 2017), and was therefore appropriate for this study. Yin (2018) and Palinkas et al. (2015) stated in case study research six participants are appropriate; Marshall et al. (2013) stated 11 to 16, and Guest et al. (2006) argued for less than six participants. Though these are suggestions to gain insight for the possible scope of the study, they are not meant to define saturation which is study dependent. Data saturation is reached when no additional evidence or information was discovered related to my research question (Ragab & Arisha, 2014). Data saturation was achieved via asking six healthcare center leaders predefined open-ended interview questions and comparing the answers to those questions until the leaders presented no new contributions to understanding or themes, indicating saturation had been reached.

Participant Target Identification Procedure

Participant targets for this study were isolated from the Medicare Provider Utilization and Payment Data: Physician and Other Supplier PUF and the Medicare Hospital Spending by Claim PUF. The data dictionary for reference is in Appendix H. The following is the isolation procedure followed by PUF:

Healthcare Center Participant Targets:

1. Modified Medicare Provider Utilization and Payment Data: Physician and Other Supplier PUF CY2015 downloaded from Data.CMS.gov (CMS, 2018c) portal.
2. The first filter applied: entity type of the provider filtered for outpatient only.
3. The second filter applied: place of services filtered for in-facility only.
4. The third filter applied: omit all services except ambulatory surgery clinics and multispecialty clinic/group practice.
5. The fourth filter applied: payment category excludes all but less than the national average payment.
6. The fifth filter applied: value of care category set to better mortality and lower payment and better complications and lower payment only.
7. Final $N = 116$

Post Discharge Outpatient Participant Targets:

1. Medicare Hospital Spending by Claim 2016 downloaded from Data.CMS.gov (CMS, 2018c) portal.

2. The first filter applied: Period filtered for 1 through 30 days after discharge from index hospital admission.
3. The second filter applied: Claim type filtered for outpatient only.
4. The third filter applied: Percent of spending filtered for <1.00%
5. Final $N = 52$

Each set of targets represent a unit of activity within the activity system interlinked by the shared object of low cost, high quality healthcare in the CHAT-III conceptual framework. Transition and preservation of the shared object from the hospital setting to the outpatient setting may exacerbate the positive social change impact by further ensuring lower mortality rates and negative individual economic impact.

Ethical Research

There is a difference between doing ethical research and merely complying with research ethics and technical requirements (Liaw & Tam, 2015). Liaw and Tam (2015) defined the difference in these two concepts by the placement of the embedded ethical framework within the construct of the study, the earlier placed *after* the establishment of the research question and methodology, and the latter placed *before* the establishment of these key components. Latterly, the researcher is not acting on a compulsatory sense of compliance; rather, the study *is ethical* from the ground up and is part of the epistemological approach. This study was built on the fundamental philosophy of ethics as defined by The National Research Act, created by the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research (1979), from the beginning and was a pervasive theme throughout the design and in its implementation.

This study did not commence until consented by the Walden University Institutional Review Board and approval number (IRB# 06-12-18-0674812) was issued to ensure ethical practice and the safety and security of all participants. A signed Letter of Cooperation by an authorized official from the healthcare center was required to be on file with the researcher before recruitment of participants within the organization began. A preamble in the form of formal informed consent was required to be understood, all questions resolved and signed before allowance of participation in this study. Complying with the Walden University Policy on Electronic Signatures, letters of cooperation and informed consents came to participants via e-mail with electronic signatures (Litwin, 2016; Stevens, Edwards, Balayah, Hopper, & Knowles, 2016). Participants received in writing and within the preamble of the interview the right to withdraw from the study entirely or refuse to answer any question at any time. Participants and their organizations were informed that this study is purely voluntary. Both the participant and the organization were informed that they were free to accept or turn down the invitation without repercussion. Participants and their organizations were informed that they held the right to change their mind later and that they retain the right to stop at any time or refuse to answer any question during the semistructured interview. Participants were asked to verbally consent again at the time of the interview and were informed that they have the right to stop, break, or refuse to answer a question at any time. Participants were informed in writing and verbally at the time of the interview the procedure for withdrawing from the study at any time via written or verbal notification to me. Participants were offered no incentive for participating other than a copy of this study upon completion, acceptance, and publication. No identifying information was presented

at any point during this manuscript including information on the participant or the participating healthcare center organizations. Participants and healthcare centers were named using a generic naming convention (i.e., OC1, OC2, H1, H2) in references where such specificity was required. At no time was this naming convention tied to any information that would lead to the identification of either the participant or the healthcare center.

All data collected during the term of this study, signed informed consents, and letters of cooperation are to be held in a locked safe for a term no less than 5 years to ensure the protection of the confidentiality of participants. Upon the completion of the required 5 years, all electronic media shall be irrecoverably destroyed, and handwritten notes shall be destroyed via shredding. Under the written request of any participant or participating organization for their specific data to be released within the 5 years; such requests shall be filled at the earliest possible convenience and shall not contain any information other than requested and only for that specific participant or requesting institution.

Data Collection Instruments

The most common data collection or analysis methods in contemporary healthcare research practice are interviews, focus groups, and observations (Halcomb, 2016). Semistructured interviews provided the vehicle for data collection within the scope of this study with me being the primary data collection instrument and the semistructured interview being the second. The use of the semistructured interview allows the researcher to probe further as the participant responds allowing for the production of robust data that may allow insights into the participant's experiences, perceptions, or

opinions (Peters, & Halcomb, 2015). Yin (2018) suggested that the interview protocol is the backbone on which the interview rests. No two interviews are alike, and there may be unanticipated opportunities for new information to emerge during the course of the interview (Marshall et al., 2013); however, the use of the interview protocol (see Appendix B) guided the implementation of each interview to ensure a *foundation* ceteris paribus across all participants.

The trustworthiness of findings is the bedrock of high quality qualitative researcher (Birt et al., 2016). Member checking is used to ensure the validity and reliability of data collected during the interview process, the third and final data collection instrument. Member checking (also referred to in the literature as informant feedback, respondent validation, member validation, or dependability checking) involves the researcher sharing transcripts or interpretations to all or some of the participants for comments; such an approach enhances the credibility of data analysis and participant involvement (Simpson, & Quigley, 2016; Varpio, Aijawi, Monrouxe, O'Brien, & Rees, 2017). Member checking generally occurs at two stages of the research process, (a) upon completion of the transcript to ensure words match intended meanings, and (b) upon completion of the initial or final data analysis to validate the researcher's interpretation of the data (Varpio et al., 2017). As data analysis in this study were aggregate, and participants and their respective healthcare centers were kept confidential, member checking was offered upon completion of the transcript only.

Data Collection Technique

To ensure effective telephonic semistructured interviews participants were asked to remove themselves from any distractions such as additional phones and computers to

allow for the highest level of attention and focus possible. The interview is a managed verbal exchange between the interviewer and the interviewee with the effectiveness of the interview heavily depending on the communication skills of the interviewer (Ritchie & Lewis, 2003). Skills include the ability to articulate structured questions, active listening, pause, prove or prompt appropriately, and the ability to encourage the interviewee to speak freely and comfortably (Clough, 2002; Linden, 2017). Finally, the ability of the interviewer to develop and maintain rapport is critical to quality data collection (Ryan & Dundon, 2008). All interviews were recorded using a digital MP3 recording device for subsequent transcription. Participants had three opportunities to consent, (a) the participant consent phase, the scripted introduction to the interview phase (see Appendix B), and (c) after recording began to ensure the capture of verbal consent (see Appendix B). The protocol for all interviews followed a fixed procedure (see Appendix B):

1. Introduction and reiteration of the research topic and purpose of the study
2. Introduction to the MP3 digital recording tool and permissions to record
3. A reminder of the right to withdraw
4. Icebreaker question round to establish rapport and gather leadership profile
5. The battery of pre-defined questions to stimulate participant conversation
6. Probing of follow-up questions as appropriate
7. Expression of thanks and offer for member checking after the interview

The semistructured interview does have a few weaknesses. Denscombe (2007) defined the interviewer effect as the sex, age, and ethnic origins of the interviewer having a bearing on the volume and depth of information the interviewer is willing to divulge and the honest nature about which they reveal that information. The five stages of

rapport provided by Ryan and Dundon (2008) may work to minimize the impact of the researcher's sex, age, and ethnic origins. Goom (2004) discussed the impact of demand characteristics on interview data as the interviewee responding with what they think the situation requires; Goom suggested making clear the purpose and topics at the beginning of the interview to put the interviewee at ease. Following this line of reason, a transparency disclosure may be found in the participant consent form, and the introduction script of the interview protocol (see Appendix B).

The use of member checking enhances the credibility of data analysis and participant involvement (Simpson, & Quigley, 2017). It is the practice of reiterating the views and ideas of the participant for clarification and intent of the words captured in the interview (Harvey, 2015). Each participant was offered the opportunity to member check post-transcription. Such an opportunity was presented as optional and encouraged, but not as required. Should the healthcare center leaders wish to review their leader's transcript, they are required to do so via a request in writing submitted to the researcher with transcripts released at the earliest opportunity. No transcripts of other participants or organizations shall ever be released. The second round of member checking offerings occurred upon completion of recompiling phase of the data analysis but again were not mandatory.

Data Organization Technique

Given the exponential growth and massive data production in all areas of science, management, and recovery of data—in the digital age—becomes a critical issue; such evolutions impact the production and use of scientific information (Martink Cadiou & Jannes-Ober, 2017). Saunders, Kitzinger, and Kitzinger (2014) spoke to the criticality of

standardized naming conventions and the usefulness of digital files in qualitative research; as this study was a qualitative design, this concept is applicable. The standardized nomenclature for participants and healthcare centers was HX and OCX respectively where X represented the number in the sequence; this practice ensures confidentiality and privacy. The same naming convention was applied to all MP3 recording and transcript files to ensure appropriately delineated swim lanes for information. The naming convention applied to all OneNote notes taken during the interview; OneNote is a cloud-based, password secure, note-taking application (Microsoft, 2017). An Excel spreadsheet was kept that houses a key linking each character sequence to demographic information. All spreadsheets, MP3 recordings, transcripts, and OneNote notes were and remain housed in a password secured encrypted file on an encrypted external hard drive disconnected from any internet connection for a period no less than 5 years and was not used in the final manuscript in any way to ensure data security and recovery.

The qualitative analysis software tool selected for this study was NVivo Pro Version 12. MaxQDA, NVivo, and ATLAS.ti are all robust qualitative analytics tools (Kaefer, Roper, & Sinha, 2015); however, NVivo incorporates spreadsheets of responses, in-debt text quires are possible, the auto-coding feature is robust, data exports are possible in all standard formats, there is high quality customer support, and a vast user base (Boston University, 2017). All exports from this software were and remain housed in the same fashion as the Excel spreadsheets, and labeling of data continued along the standardized naming convention.

Data Analysis

A critical step in qualitative research is the analysis of the compiled data (Leech & Onwuegbuzie, 2007). Triangulation allows for analysis of multiple sources of data to address a larger range of historical and behavioral issues and the development of converging lines of inquiry (Wilson, 2016; Yin, 2018). Patton (2002) outlined four types of triangulation; including (a) data, (b) investigator, (c) theory, and (d) methodological triangulation. Utilization of multiple sources in parallel allows for simultaneous triangulation to develop a more inclusive understanding of the data analyzed (Carter, Bryant-Lukosius, DiCenso, Blythe, & Neville, 2014; Casey & Murphy, 2013). The overarching research question for this study was, what strategies do successful healthcare center leaders use to mitigate the risk of reimbursement penalties under MACRA's QPP? Using semistructured interviews with healthcare center leaders and QRUR archival evidence may allow for a more robust exploration of strategies and their lasting impact on healthcare centers reimbursement risk.

Data Triangulation

Data triangulation was an additional data analysis technique used in this study. Yin (2018) suggested the use of multiple sources when case studies are performed, arguing that a major strength of case study data collection is the ability and opportunity to use many various sources of evidence. COSMOS Corporation (1983) found that case studies that included multiple sources of evidence were rated higher regarding overall quality as compared to those that relied on a sole source of information. Patton (2002) outlined four types of triangulation; they include (a) data triangulation, (b) investigator triangulation, (c) theory triangulation, and (d) methodological triangulation. Wilson

(2016) and Yin (2018) defined data triangulation as the use of multiple sources of data that allows for the enrichment of the pool of data or to confirm the results of the research. Data triangulation was appropriate in this study as multiple forms of data were considered including semistructured interviews and historical trends of the QRUR. Inclusion criteria for participants of this study were limited to 2016; however, strategies identified in healthcare centers that have a consistent ability to remain in the high quality, low cost quadrant of the QRUR may provide additional merit to the strategy and to the need for replication in those institutions that remain at risk for reimbursement penalty. Utilizing the semistructured interview in parallel with the historical QRUR data allowed for simultaneous data triangulation (Casey & Murphy, 2013).

Data triangulation allows a researcher to corroborate similar findings in qualitative research with triangulation supporting the findings of a case study if the lines of evidence converge on the study's findings (Yin, 2018). This method assists in validating findings, opens the doors to various aspects of dialogic communication, and increases the holistic body of understanding of a given phenomenon (Okoe & Boateng, 2015). Archival records in the form of the annual QRUR and semistructured interviews were appropriate for this study. TINs in the high quality, low cost quadrant of the QRUR, which offers annual historical trends of healthcare centers placement among the four quadrants, offered potential participant targets. Institutions that remain fixed in the high quality, low cost quadrant may provide additional support for the strategies implemented by the healthcare center leaders as identified in the semistructured interview. Use of data triangulation limited bias within the study through convergence

(Overgaard, 2015; Yin, 2018); in the case of this study, the evaluation of convergence occurred post-coding with key strategic themes.

Yin's Recursive and Iterative Phases

It is the task of the researcher to make sense out of vast amounts of data through a systematic and methodical approach to bring order, structure, and meaning to such a mass (Dormer, Gorman, & Calvert, 2015). Often, in the qualitative analysis, the primary tool is the investigator's innate ability to bring order to their data set (Gorman & Clayton, 2005). Yin (2015) described five phases of qualitative data analysis:

1. Phase 1: Compile and sort data collected in the field
2. Phase 2: Breakdown the compiled data into smaller fragments
3. Phase 3: Using themes, categories, or codes, reorganize the fragments into groupings
4. Phase 4: Recompile the organized fragments and formulate initial interpretations
5. Phase 5: Conclude the initial interpretations and all other phases of the cycle

Compiling of data. In qualitative research, one must systematically organize and highlight meaning to analyze data efficiently beginning with a comprehensive compiling of data (Harvey, 2015; Vaughn & Turner, 2016). Yin (2018) outlined the compiling of field data as a principle of data collection and analysis citing the increasing use of electronic media as a tool for such a task. Data compilation was housed in a combination of Microsoft Word, Microsoft Excel, and NVivo Data Files and included interviews with associated transcripts, reflective journal entries, and QRUR annual trends for associated participants. File creation followed the standard naming convention as established in the

Data Organization section of this manuscript and data collected was placed within the digital file same day as to ensure data was not inadvertently mislabeled or confused. Single file names also followed the standard naming convention to ensure confidentiality of participants and their institutions.

Breakdown of data. In Yin's (2015) five phases, breaking down of the data follows the compiling process. In many cases, data must be broken down into its fundamental elements to effectively illustrate the responses (Vaughn & Turner, 2016; Varpio et al., 2017). NVivo software is a proven coding program that allows for the emergence of themes (Zamawe, 2015); in the case of this study, individual participants were individualized via category to allow for the emergence of themes and patterns using NVivo software.

Reorganization of data. Reorganization of the data is a method by which a researcher may reorganize the fragments in phase two using themes, categories, or codes (Yin, 2015). Vaughn and Turner (2016) suggested cognizance at this stage of the identification of categories, the mapping of relationships, and the set exclusion criteria as key strategies to consider for the recompiling phase. It is crucial that researchers also identify the proponents of thematic construction, who constructed them and reflexively consider the points of view (Varpio et al., 2017). Coding categories were striated to allow for clustering of data during the reorganization phase. The frequency of occurrence and the fundamental tenants of CHAT-III set the prioritization of data.

Recompile process. Recompiling is the formulation of initial interpretations (Yin, 2015). This phase offers the opportunity for the research to begin to look for some trends and to effectively use the strategies of identification of categories, mapping of

relationships, and setting of exclusion criteria that were a consideration in reorganization phase (Vaughn & Turner, 2016). Yin (2018) suggested that the ability of a researcher to glean interpretation is at the heart of case study research and the skill of the researcher influences the interpretation capability. Interpretations of data included all triangulated sources, NVivo analysis of themes and field notes. Upon completion of this phase and formulation of initial findings, each participant had the opportunity for member checking.

Drawing conclusions. Drawing conclusions is a process by which the research considers all previous phases of the data analysis process and extrapolate conclusions and findings (Yin, 2015). Conclusions should be specific and dynamic with special consideration to the significance of the study, the completeness of the study, alternative perspectives, and the display of enough evidence to support findings and conclusions (Yin, 2018). In the case of this study, all findings and conclusions were tied directly back to the data for supportive evidence. No finding or conclusion is a part of this studies discussion without evidence or consideration of bias neutrality.

Key Themes

Neither data nor themes possess agency *per se*; it is the researcher's interactions with the data that allow identification of themes and their associated descriptions (Varpio et al., 2017). The themes identified by the researcher using NVivo software and the existing body of literature are contrasted to explore any cross-linkages to support further or possibly refute findings. Variations found within the literature to the findings or conclusions of this study are reported in the Presentation of Findings section of this study, specifically within the analysis and interpretation of findings in the context of the

peer-reviewed literature. The findings discussed in this study and the existing literature are cross-linked to demonstrate effective business practice.

Validity and Reliability

Qualitative research often draws criticism for lacking scientific rigor with poor justification of the methods used, a general lack of transparency in the analytical procedures and findings being merely a collection of subjective opinions that are open to researcher bias (Noble & Smith, 2015). In the broadest sense of terms, validity refers to the integrity and application of the methods undertaken and the precision to which findings accurately reflect the data; reliability is the consistency with the employed analytical procedures (Noble & Smith, 2015). Lincoln and Guba (1985) proposed a qualitative assessment framework by which truth value, consistency and neutrality, and applicability test qualitative research rigor. Validity corresponds to truth value where the researcher recognizes that multiple realities exist, the researcher articulates personal experiences and viewpoints that may have resulted in methodological bias, and the participants' perspectives are clearly and accurately represented (Noble & Smith, 2015). Generalizability corresponds to applicability through specific consideration to the degree to which findings may apply to other contexts, settings, or groups and is an embedded concept of validity (Noble & Smith, 2015). Reliability is tied to consistency in that it relates to the trustworthiness by which methods have been undertaken and is dependent on the researchers' decision trail where decisions are made clear and transparent (Noble & Smith, 2015). A second researcher should be able to replicate the findings ceteris paribus. Neutrality (confirmability) is also tied to reliability when considering truth value, consistency, and applicability within the body of the study manuscript.

Researchers should differentiate between participant accounts and the researchers' philosophical position, experiences, and perspectives.

Validity

Leung (2015) defined validity in qualitative research as meaning the appropriateness of the tools, processes, and data; it is a measure of whether the research question is valid, the choice of methodology is appropriate for answering the research question, the design is valid for the methodology, the sampling and data analysis is appropriate, and finally, the results and conclusion are valid for the sample and the context. Noble and Smith (2015) defined validity as the precision to which research findings accurately reflect the data and are tied to a truth value. Regarding this study, validity rests on credibility, transferability, confirmability, and data saturation.

Data triangulation, an interview protocol, and a transcript review through member checking are used to guard against threats to the validity of this study and ensure credibility, Data triangulation refers to using more than one particular approach during the research process to enrich that data or to confirm the results of the research (Wilson, 2016; Yin, 2018). In the case of this study, the QRUR is a government source of archival evidence demonstrating the placement of the TIN in the high quality, low cost quadrant of MACRA's QPP. Though inclusion for this study was limited to 2016 only, strategies identified in institutions that have an ongoing ability to land in the high quality, low cost quadrant may have established a trend rather than a possible outlier. Identification of such a trend may enhance the argument for healthcare centers to replicate such a strategy. The interview protocol (see Appendix B) ensures a more consistent product for coding in qualitative research (Castillo-Montoya, 2016). By keeping participants on task with

open-ended target questions, cross-linkages between participants may occur in higher frequency. Further, by ensuring that interview questions were in alignment with the overarching research question, that the construction of an inquiry-based conversation was in line with the protocol, and that the researcher receives interview feedback via member checking, allowed the researcher to obtain rich and detailed qualitative data for the understanding of a participant experience (Castillo-Montoya, 2016).

The transferability of a study and associated findings is the degree to which such findings may be transferred to another study within a similar context (situations, times, or populations) and is dependent on the consumer of the study to align such a transfer (Yilmaz, 2013). Lincoln and Guba (1985) stated: "It is, in summary, not the naturalist's task to provide an index of transferability, it is his or her responsibility to provide the database that makes transferability judgments possible on the part of potential appliers" (p. 316). Lincoln and Guba go on to recommend providing the reader with a thick description of the studied phenomenon. Castillo-Montoya (2016) suggested that a well-aligned interview protocol could produce such a rich pool of data. Combined with triangulation, the data obtained through this study was rich and of multiple resources validating the ability of the identified strategy to be used to successfully land in the high quality, low cost quadrant of the QRUR, thereby minimizing reimbursement risk for the organization.

Noble and Smith (2015) described confirmability as being achievable when credibility, transferability, and truth value are a constant and consistent iterative process. Truth value is the internal recognition that multiple realities exist, and the researcher actively outlines personal experiences and viewpoints that may result in any form of bias

(Noble & Smith, 2015). Personal reflection and self-awareness are critical to the assurance of truth value as both in tandem generate the ability to gauge the perception of attitudes, actions, and responses of the researcher (Finlay, 2002). Nilson (2017) identified that the duty of the researcher has a responsibility to the core values of reciprocity, respect, equality, responsibility, protection, and integrity in all research. By identifying personal bias and inherent privilege through self-reflection and self-awareness, bias may be reduced to allow for an increase in confirmability (Kaczynski, Salmona, & Smith, 2014).

Data saturation is achieved when no new relevant information occurs through the addition of participants (Marshall & Rossman, 2016). Though there is an argument within the literature on the appropriate number of participants needed (Fusch & Ness, 2015; Palinkas et al., 2015; Yin, 2018) six healthcare center leader participants from the high quality, low cost quadrant of the QRUR were involved in this study. Data saturation occurred once the participants no longer yielded new contributions to understanding or themes (Marshall & Rossman, 2016). Data saturation was achieved by asking the participants predefined open-ended interview questions and comparing the answers to those questions until the leaders presented no new contributions to understanding or themes.

Reliability

Leung (2015) defined reliability in quantitative research as referring to exact replicability of the process and the results. Leung found that in qualitative research there exist diverse paradigms which make such a definition of reliability in qualitative research challenging and epistemologically counter-intuitive; thus reliability for qualitative

research lies within consistency where there exists an acceptable margin of variability provided the methodology and epistemological logistics consistently yield data that are ontologically similar but may differ in richness from context to context. Reliability and dependability occur when data is proven to be accurate and when findings of research may be replicable (Matamonasa-Bennett, 2015; Sayed & Nelson, 2015), though with an understanding in qualitative research an acceptable degree of variability (Leung, 2015). To ensure dependability within this study member checking was used. Member checking in research involves the researcher sharing completed interpretations to all or some of the participants for direct feedback; such an approach enhances the credibility of data analysis (Simpson & Quigley, 2016; Varpio et al., 2017). Participants were given the opportunity for member checking as outlined by Varpio et al. (2017) upon completion of the transcript to ensure words match intended meanings. Noted changes were tracked using track changes and stored electronically with encryption and password protection for the duration of the required 5 years.

Transition and Summary

The purpose of this proposed qualitative multiple case study was to explore strategies that successful healthcare center leaders use to minimize the risk of reimbursement penalties under MACRA's QPP. Section 2 focused on the role of the researcher and the need for ethical research, the participants within the population, research methodology and design, data collection and organization, data analysis, and reliability and validity. In Section 3, the presentation of findings, application to professional practice, the implication for positive social change, recommendations for

actions, the proposal of recommendations for future research, researcher reflections, and a conclusion to the study shall be offered.

Section 3: Application to Professional Practice and Implications for Change

Introduction

The purpose of this qualitative multiple case study was to explore strategies that successful healthcare center leaders have used to mitigate the risk of reimbursement penalties under MACRA's QPP. The interview protocol (see Appendix B) served as guidance for my semistructured interviews with six healthcare center leaders that had landed within the high quality, low cost quadrant of the 2016 QRUR, identified by the CMS PUFs. Leaders also had an active knowledge of and participated in increasing quality and reducing the cost of care delivery strategy within their healthcare center in the United States. Management interviews were appropriate because such a process allows for the capture and understanding of how leaders have influenced their organizations from their unique perspective (see Drew, 2014).

In this chapter, I present individual case study findings through the lens of the CHAT-III framework. Primary global themes for organizational culture included a foundational core with flexibility and iterative process improvement practice. The highest frequency global themes in the strategy formation process included total employee involvement and a quality first, cost benefit strategy structure. Dominant global themes in the implementation process included multidepartmental and multiorganizational collaboration, task-based implementation, and data transparency. Localized cadence meetings were the leading global theme in the control process. In Section 3, I will provide the presentation of findings, applications to professional practice, implications for social change, recommendations for action and future research, reflections, and conclusions.

Presentation of the Findings

The overarching research question for this study was: What strategies do successful healthcare center leaders use to mitigate the risk of reimbursement penalties under MACRA's QPP? The presentation of findings subsection includes a summary of the CMS 2016 QRUR summary of conclusions for the United States and a series of independent case study findings. The section concludes with a presentation of global strategies based on embedded independent case study findings.

CMS 2016 QRUR United States Summary of Conclusions

In 2016, nearly 1.39 million eligible providers and practices met criteria to participate in PQRS; moreover, clinicians subject to the value modifier increased from 226,000 in 2015 to 1,151,353 in 2018 (CMS, 2018a). Of those eligible in 2016, 31% (n = 435,111) were subject to the downward payment adjustment of -2% for 2018, 85% (n = 369,844) of those to receive the negative adjustment did not participate in the program as they submitted no data (CMS, 2018a). In total, 69% (n = 962,974) of eligible providers and practices avoided the 2018 payment adjustment (CMS, 2018b). It is of note that for the 2015 MIPS, reported in the 2016 QRUR, to impact reimbursement in 2018, eligible clinicians and practices needed only meet the minimum standards of quality to avoid penalty (CMS, 2018b). This minimum standard is only true for the initial year, and it is likely that the 2019 QRUR will demonstrate drift from the current breakdown (see Figure 8). In 2016, 20,480 clinicians (1.8%) and 3,478 practices (1.7%) will receive between 6.6% to 19.9% more on their PFS payments related to high performance on quality and cost measures (CMS, 2018b). The number of clinicians and practices receiving a downward adjustment in payments dropped in 2018 by 7% as compared to 2017

demonstrating a significant movement in United States healthcare concerning the total quality of care and the associated cost of healthcare delivery despite the expansion of eligible clinicians and practices (CMS, 2018a).

Calculations for PQRS consider the complexity and multiple co-morbidity care requirements to ensure accurate representation of the standard evaluation and management bell curve resulting in the distribution within the QRUR (see Figure 8). In 2016, 2017, and 2018 the majority of upward payment adjustments went to clinicians managing complex beneficiaries (CMS, 2018a, 2018b).

	Low Quality	**Average Quality**	**High Quality**
Low Cost	0.0% (2,526)	+1.0x = +6.63% (1,231) +2.0x* = +13.26% (4,252)	+2.0x = +13.26% (220) +3.0x* = +19.88% (53)
Average Cost	0.0%** (60,634)	0.0% (743,774)	+1.0x = +6.63% (10,460) +2.0x* = +13.26% (4,265)
High Cost	0.0%** (7,537)	0.0%** (19,670)	0.0% (256)

*Clinicians subject to the Value Modifier that bill under these practices are eligible for an additional +1.0x adjustment to their Medicare payments for treating high-complexity beneficiaries.
** In 2018, practices that met minimum quality reporting requirements will not receive downward adjustments due to performance.

Figure 8. Clinicians in practices subject to the 2018 value modifier that met minimum quality reporting requirements in each quality-tier, and the associated modifier amount (CMS, 2018b).

For Category 1 practices (*n* = 85,509 practices), defined as fee-for-service with no link to payment quality and with a no-risk transitional period between PQRS and MIPS, domains demonstrate mean composite quality and cost scores (see Figure 9); whereas, with Category 2, adjustments are made automatically based on performance scores and defined as fee-for-service with a link of payment to quality and value (CMS, 2018b).

	All Category 1 practices	Low quality	Average quality	High quality
Number of practices	85,509	6,783	75,354	3,372
Number of physicians	629,452	51,050	566,638	11,764
Number of NPs, PAs, CNSs, and CRNAs	225,426	19,647	202,289	3,490
Average Quality Composite Score	**0.3**	**-1.1**	**0.4**	**1.2**
Average domain scores:				
Effective clinical care	0.2	-1.0	0.3	1.3
Person- and caregiver-centered experience and outcomes	0.1	-0.9	0.1	0.8
Community/population health	0.5	-0.7	0.6	1.4
Patient safety	0.2	-1.1	0.4	0.7
Communication and care coordination	0.3	-1.1	0.4	1.1
Efficiency and cost reduction	0.0	-0.7	0.1	0.6
Average scores for claims-based quality outcomes measures:				
Acute ACSC Composite rate[a,c]	5.4	9.9	5.1	3.4
Chronic ACSC Composite rate[a,c]	37.7	51.6	36.8	30.9
30-day All-Cause Hospital Readmission rate[b,c]	15.1	15.4	15.1	15.2
Average Cost Composite Score[c]	**-0.3**	**0.3**	**-0.3**	**-0.6**
Average per capita costs:				
All attributed beneficiaries[c]	$10,957	$11,959	$10,903	$10,254
Diabetes[c]	$18,032	$20,070	$17,895	$17,038
COPD[c]	$30,818	$35,749	$30,532	$27,914
CAD[c]	$20,348	$23,320	$20,126	$19,360
Heart failure[c]	$31,575	$36,069	$31,305	$28,870
Average MSPB[c]	$20,295	$20,215	$20,312	$20,117

Note: The measure scores shown in this table are unstandardized performance scores. Domain scores are the equally weighted average of standardized measure scores in the domain. The composite scores are the equally weighted average of non-missing domain scores. Scores shown in this table are based only on non-missing values.

[a] Hospital admissions per 1,000 beneficiaries.

[b] Per 100 index admissions.

[c] Higher scores indicate worse performance.

Figure 9. Mean performance of Category One practices (*n* = 85,509), by quality tier in 2016 QRUR reported in 2018 (CMS, 2018b).

CMS found that Category 1 practices, representing 43% of healthcare dollars, outperformed other practices on all claims-based quality outcome measures, except the

30-day all-cause hospital readmission measure, and every cost measure (CMS, 2018b). The primary driver of performance for the 2018 value modifier for Category 1 practices was quality, required to be higher than the 93erd percentile, rather than cost, required to be below the 9th percentile (CMS, 2018a, 2018b). It is of note that clinicians subject to the value modifier in smaller practices will receive a higher payment adjustment, $13,000 per clinician, versus larger groups of greater than 99 clinicians receiving only $3,000 per clinician (CMS, 2018b). This finding demonstrates that smaller facilities may be at an advantage yet have higher opportunity cost than the larger practices. Category 2 practices have the 2018 value modifier automatically adjust downward payments to clinicians subject to the value modifier in practices not meeting quality reporting requirements to avoid downward MIPS related QPP payment adjustments in 2018. These findings suggest that the separation between practices that succeed and practices that fail to avoid risk are those that have and have successfully implemented both quality and cost strategies allowing them to mitigate the risk of reimbursement penalties under MACRA's QPP.

Independent Case Study Findings

OC1: Academic, not-for-profit outpatient center. A telephonic interview with an operations health center leader of OC1 focused on three strategies—two quality based and one cost (see Figures 10-12 respectively)—that the leadership took from formulation to implementation with significant success within the data collection period. OC1's primary history driving the need for strategic change was purely payer driven with the migration from fee-for-service to the MIPS model compounded by the replication of CMS's quality/cost methodology by private payers in the form of Healthcare

Effectiveness Data and Information Set (HEDIS) measures. As this healthcare center is a not-for-profit academic center, the risk profile was extensive and the fiscal sustainability margin thin for penalty assessment to the then current reimbursement rates. The driving force is in line with Holota et al.'s, (2016) assertion that the fundamental precondition for the formation of a strategy to improve any process is the understanding of the goals and objectives that need to be achieved, in this case, fiscal sustainability. Significant barriers to implementation include institutional culture, non-engaged leadership with clinic activities leading to stunted innovation and collaboration and corporate separation of outpatient centers, hospital, physician group, and educational programs.

OC1 is a part of a series of Graduate Medical Education components comprising the heatlhcare center. OC1 is the physician arm with associated outpatient clinics; the hospital where physicians hold teaching privileges is a separate entity, as is the medical school, yet, the physician's employment exists with the medical school and not OC1 meaning OC1 has no viable control over the human resource functions, including accountability, of their physicians. This structure presents a significant complication in implementation, standardization, and accountability, and places the corporate operations structure in a consulting role rather than a leadership role. This structure and its challenges are in juxtaposition with the assertion by Glazer and Sharp-McHenry (2017) that unification and partnerships with clinical academic institutions and healthcare systems are critical for the advancement of quality of care. This structure is also in direct opposition with Oostra's (2016) findings that the dyad relationship between physician and operational leaders is transitioning from siloed to a model characterized by a

distributed, situational framework of accountability that fluctuates between the two depending on the situation.

OC1 also found that changes in leadership in both internal and external partners result in significant delays or failures in implementation. OC1 most often overcomes these barriers to drive implementation of strategy via relationship building and appealing to the quantitative analytics side of the physician leader of each division and working with new leaders on catching them up as quickly as possible while respecting their opinion and insight. This tactic is in line with the findings of Styhre et al. (2016) suggesting that physicians in training are unwilling to take business electives because they see them as opportunity cost for clinical learning. In carrying forward clinical education only, appealing to the provider in a way that represents the majority of medical academia may be advantageous; especially if they lack an understanding of the intertwined quality/cost model. The leadership of OC1 took an isolationist approach by identifying specific metrics with the lowest composite scores that they felt they *could* move given limited available resources and designed strategy and allocated funding based on the probability of success and ability to implement and control the intended process despite the challenges of leadership at the medical division level.

OC1 found that a funded innovations committee strategy with the primary goal of vetting ideas with appropriate quantifiable forecasting models allows for higher levels of innovation to resolve barriers to high quality, low cost heatlhcare. Physicians, corporate leaders, and clinic leaders are the core of the committee with additional departments and external facilities being ad hoc members. This process allows for all members of the organization to bring ideas to and be validated, heard, and involved in the iterative

improvement process. Dzau (2015) found that the eradication of existing silos is critical to innovation and sine qua non to the future success of healthcare centers in the contemporary environment. Thus, innovation committees may be best practice to drive a culture of open communication and collaboration.

OC1 Quality Strategy 1 focuses on the patient population requiring diabetic militias ocular fundus exam; because diabetes mellitus is a common diagnosis with associated comorbidities, the population for OC1 that meet criteria is significant. The MIPS diabetes eye exam measure examines the percentage of patients 18-75 years of age diagnosed with diabetes who have had a retinal or dilated eye exam by an eye care professional during the measurement period or a negative retinal exam, represented by no evidence of retinopathy, within the 12 months prior to the measurement period (MD Interactive, 2018). Before this strategy, primary care providers referred patients to ophthalmology for a follow-up visit and exam. The primary care clinic staff scheduled the follow-up appointment before the patient leaving; however, due to existing volume in ophthalmology, follow-up appointments were scheduled very far out resulting in a no-show rate of 50% and yielding a failure rate in the quality measure of the same percent.

OC1 increased the percent of patients with an exam by > 30% by installing ocular fundus cameras in their primary care clinics with the capability of electronically transmitting those images to the ophthalmology division's primary clinic, to evaluate and report on findings via a telemedicine-like model. This strategy allows for the screening of the patient for retinopathy—a requirement of the quality measure—to identify those patients who required a follow-up visit. Conlin et al. (2015) found that technology-assisted eye exams to have an 86% sensitivity and 84% specificity for referable ocular

findings with high agreement for the diagnosis of diabetic retinopathy and other major ocular diagnoses. By triaging outpatients that do not require a retinopathy exam with an exam proven to be highly agreeable to diabetic retinopathy, the primary care clinic meets the quality measure of screening, the patient does not require an unneeded visit to a specialist, the unnecessary volume to ophthalmology diminishes, and total cost per beneficiary falls as multiple visits are not necessary. Winters et al. (2017) provided evidence of the cost-effectiveness of increasing patient activation through easily accessed supportive therapy and adherence to ocular exams in patients with Diabetes.

As OC1 is an academic institution, education for the primary care clinic staff to perform ocular fundus exams is possible via existing infrastructure. Primary activity units within the activity system include the outpatient center, the primary care clinics, and the ophthalmology division. Figure 10 outlines the key components within the activity system as well as history, culture, associated internal contradictions, and associated external contradictions. Primary internal contradictions focus on clinic process variability. Primary external contradictions focus on non-academic process variation for the flow of images into the ophthalmology division when this service outside of the existing academic setting.

OC1 quality strategy two focuses on patients who have an appointment scheduled with a primary care clinician, but who no-shows or canceled their appointment before the visit. Multiple MIPS measures focus on preventative and screening healthcare strategies for treating patient conditions before acute exacerbation; examples include breast cancer, colorectal cancer, osteoporosis screenings, and influenza and pneumonia vaccinations respectively (CMS, 2016). Accessibility and availability are critical aspects of effective

primary care systems (Ansell et al., 2017). The risk profile for reimbursement penalty increases with noncompliant patients; OC1 demonstrate that mitigation is possible by assisting this sub-population in removing both perceived and real barriers to care. OC1 decreased no-show rates by implementing a call back program by which the clinic staff actively called no-show and cancellation patients to reschedule their appointments. All calls occur within 48-hours. This program allows for the identification of days and times that are statistically more likely to see no-shows and cancelation—now called red zones—to permit strategic double and triple booking. This strategy is in line with the findings of Wiesche, Schacht, and Werners (2016) that opened interday appointment slots for non-scheduled patients to allow for strategic booking on demand. The Demand Capacity Team consistently reviews data for opportunities to improve or alter the days and times of strategic double and triple booking via demand capacity modeling and targets specific patients via forecasting a model based on past trends to quantify the probability of the patient arriving.

Strategy 2 also provided quantifiable data on physician bumping and schedule preferences that may increase the risk profile, decrease patient satisfaction, and peer satisfaction. OC1 found that using the honor system with the providers was not sufficient to control, what was rampant, movement of patient appointments at the provider's whim—often days or hours before the scheduled appointment. Though provider preferences are a consideration where possible, approval should be in line with the patient flow profile of the clinic (Wiesche et al., 2016). OC1 also found that the implementation of a new policy and procedure for physician vacation and time-off requests in parallel with the call back program increases the percent of patents that arrive for their primary

care appointment. Figure 11 outlines the key components within the activity system as well as history, culture, associated internal contradictions, and associated external contradictions.

Primary activity units within the activity system include the outpatient center, the primary care clinics, and the Demand Capacity Team. Figure 11 outlines the key components within the activity system as well as history, culture, associated internal contradictions, and associated external contradictions. Primary internal contradictions focus on clinic process variability in the coding of no-show, canceled, and bumped patients and cancelations ordered by the physician with no accountability. No primary external contradictions are in this activity system.

OC1 cost strategy one focuses on the patient population using the ED as their primary care provider, or who have a chronic care condition(s) that is/are poorly controlled resulting in acute exacerbation. Whittaker et al. (2016) demonstrated that there is a statistically higher cost associated with utilization and hyper-utilization of EDs as primary care. More, Whittaker et al. found an inability to capture several quality sensitivity checks. By failing to provide primary care to the patient, the entirety of the MIPS measures and associated risk falls to the ED which may not be equipped to do preventative medicine (i.e., mammography and follow up, HgA1c follow up with insulin titration). Further, acute exacerbation of a chronic care condition may represent a failure of primary care to manage the condition appropriately, a failure in patient activation, or having no primary care (Green, Hibbard, Alvarez, & Overton, 2016).

OC1 increased outpatient visits post-ED discharge, and reduced ED hyper-utilization and return visits by placing a primary care liaison physically in the department

that works with the patient to schedule their primary care appointment for follow up prior to the patient discharge. Having the liaison directly in the department allows for an interactive process of unification between the outpatient and hospital settings, and allows the liaison to assist the patient in eradicating perceived or real barriers to primary care in real-time.

Primary activity units within the activity system include the outpatient center, the primary care liaison, and the ED. Figure 12 outlines the key components within the activity system as well as history, culture, associated internal contradictions, and associated external contradictions. Primary internal contradictions focus on limitations to availability yielding variation in ED process and variation in primary care clinic physician preferences due to OC1's nonexistent accountability capability. Primary external contradictions involve barriers to follow-up or establishment of primary care (i.e., transportation, child care, insurance, language barriers).

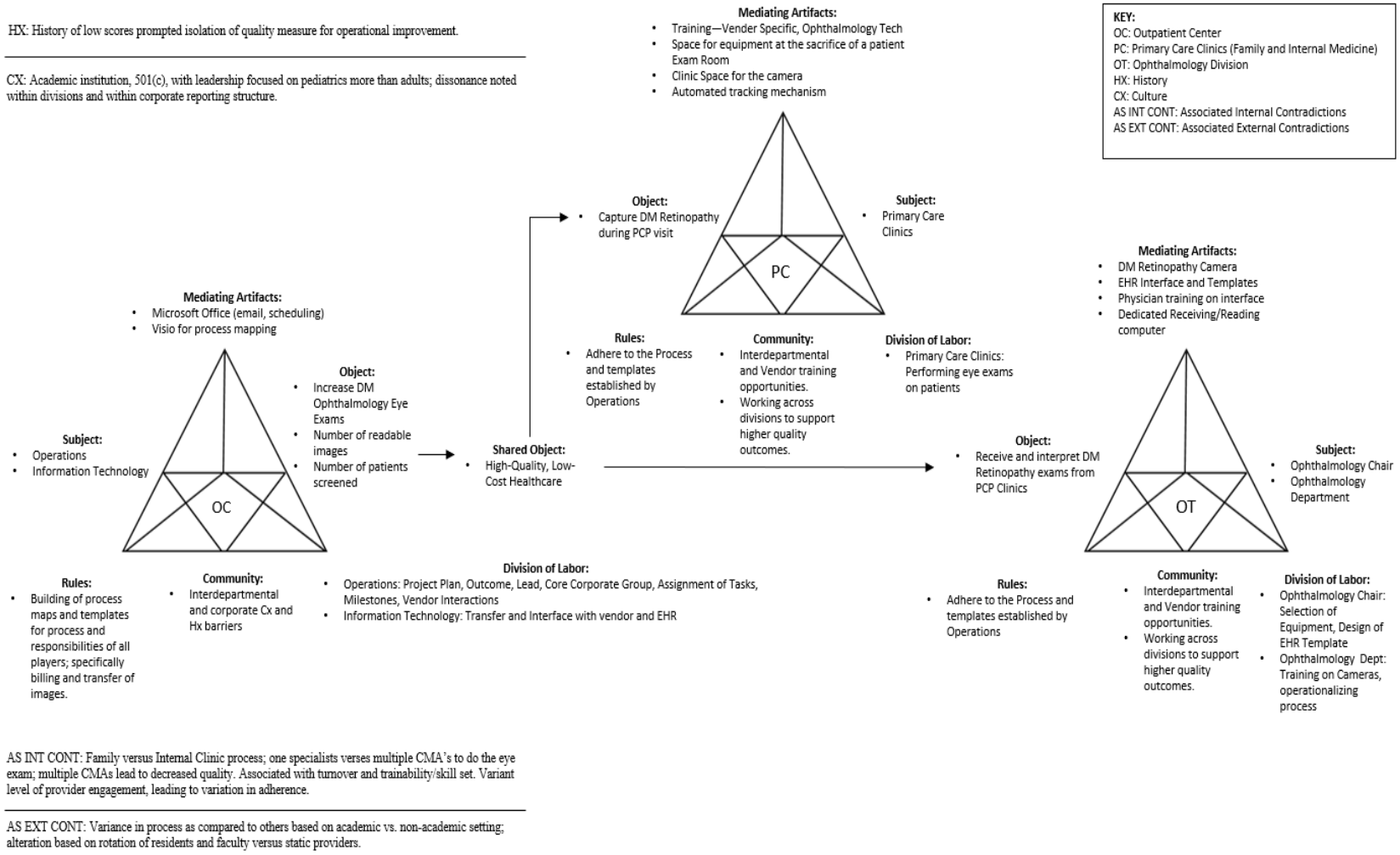


Figure 10. OC1: Quality strategy, diabetes militias fundus camera implementation with the goal of increasing ocular care in the Diabetes Militias patient population and easing the burden of multiple clinic visits for the patient.

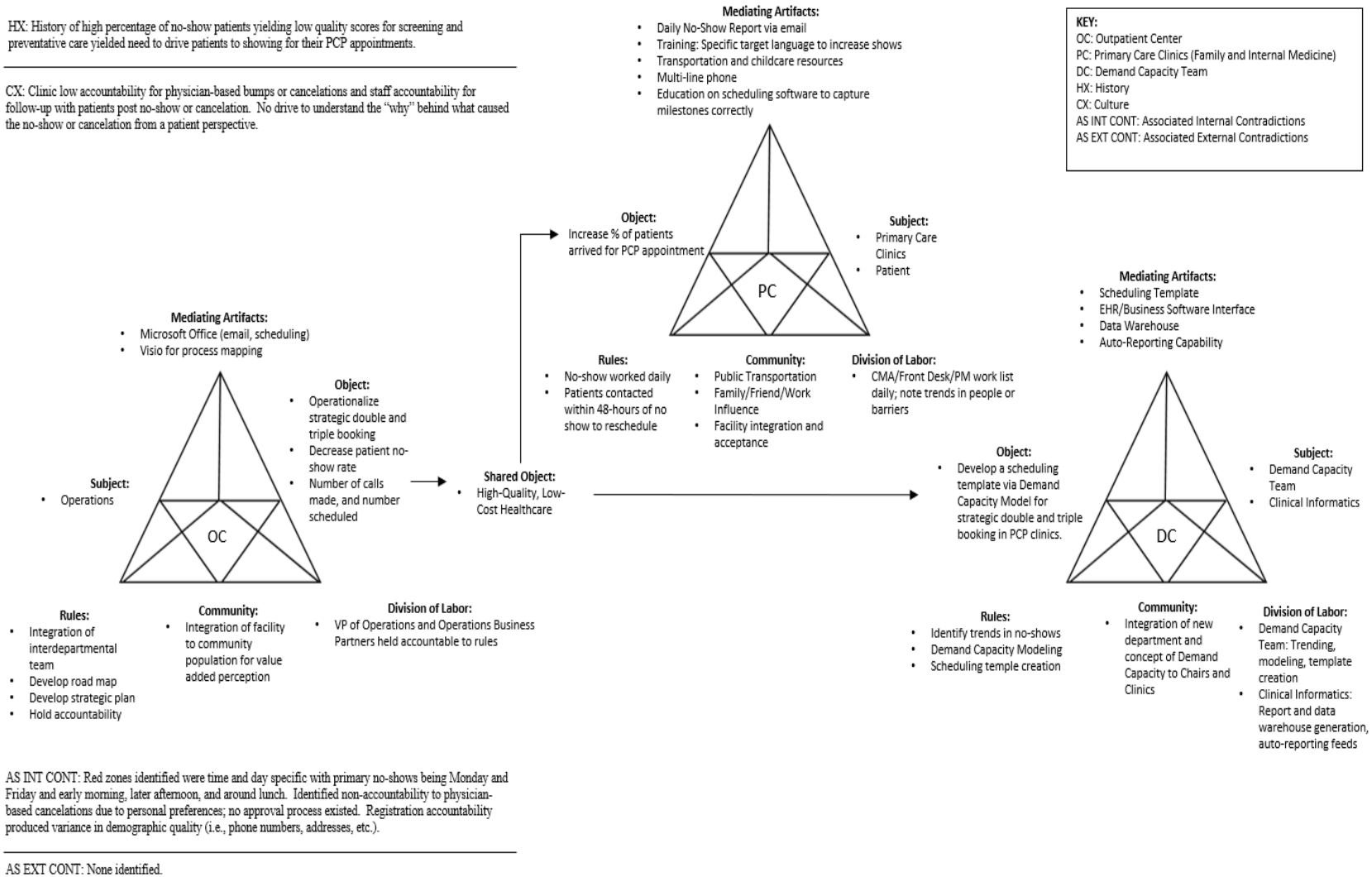


Figure 11. OC1: Quality strategy, no-show, demand capacity model, and strategic double and triple booking with the goal of increasing total volume, reducing no-show rates and increase patient screening and preventative care.

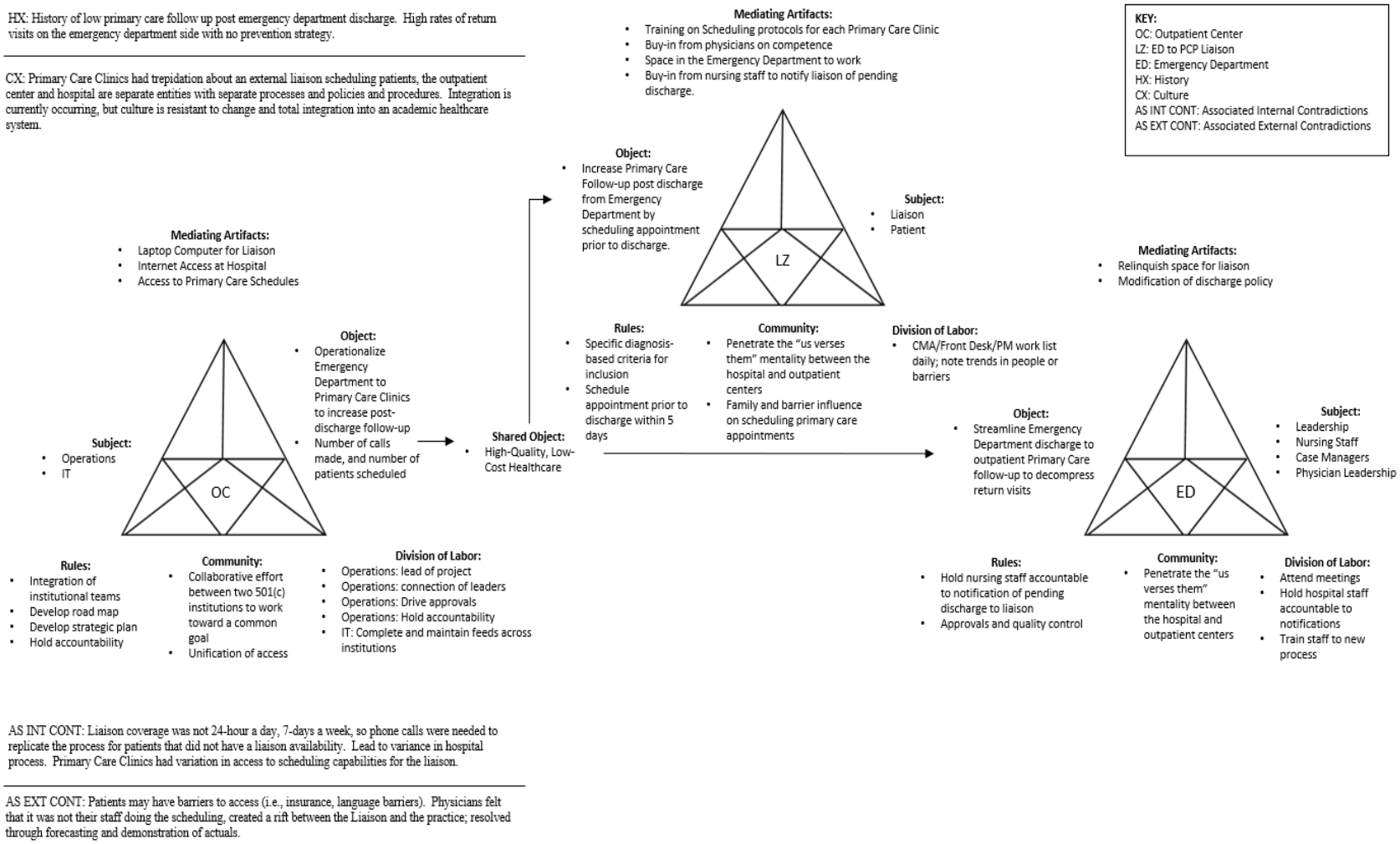


Figure 12. OC1: Cost strategy: Emergency department to primary care liaison with the goal to increase post emergency department primary care follow up and reduce return visits to the emergency department.

PG1: National academic and non-academic for-profit and not-for-profit physician group. A telephonic interview with a clinical health center leader of PG1 focused on one combined quality and cost strategy (see Figure 13) that the leadership took from formulation to implementation with significant success within the data collection period. PG1's primary history driving the need for strategic change was multifaceted including the need to continuously improve quality, unify the existing partnerships toward the same goal, and drive profit margins and fiscal sustainability for both for-profit joint ventures and not-for-profit collaboratives. PG1 is a national physician group spanning the continental United States that supplies physician services to existing healthcare facilities. Under the QPP, there is a significant risk of financial loss due to the sheer volume of the company and the fact that the physician is the primary driver of meeting or failing to meet MIPS measures.

PG1 and its partners have a culture of iterative process improvement, one that is not passive or reactive but rather proactive in identifying specific areas that are or may become problematic that may drive down quality or produce cost waste. The iterative improvement model represents the growing trend in healthcare centers where continuous process improvement is a framework by which leaders are driving service quality and health outcomes, cost reduction strategies, and unification of comprehensive care team modeling (Smith, Orlando, & Berta, 2018). As this is a prevalent component of the company, highly qualified clinical process improvement personnel are a sine qua non to the companies overall success in devising and implementing strategies—especially that of quality improvement and cost reduction. PG1 invests considerable resources in the retention of these employees, gives them freedom over the evaluation process,

identification of improvement opportunities, and the power to facilitate change. A one size fits all corporate strategy is not the PG1 way; instead there is a standardized base with flexibility given existing variables at each site. This foundation is in line with H1's foundation with flexibility model.

PG1 found that a single operational unit controlling the components of strategy formation, vetting, and implementation is best practice. This practice is not to say that the operational unit are responsible for all components, rather, they are the facilitators of the developmental and implementation process with subject matter experts involved throughout the entirety of the process. This strategy is similar to the OC1 innovations committee strategy in that there is a core group of individuals to with the primary goal of vetting ideas with appropriate quantifiable forecasting models to find solutions and resolve barriers to high quality, low cost healthcare. Kurvers, Wolf, Naguib, and Krause (2015) found this process, combined with flexible leadership, allows for higher levels of innovation through collective intelligence. In the case of PG1, the personnel on the strategy formation committee are also responsible for oversight and activities to bring formed strategy to fruition.

PG1's quality/cost strategy identified in the interview focuses on the ED throughput process improvement and controls. The ED has a defined set of MIPS measures; however, in the absence of a primary care physician within the collection year, the patient is assigned to the ED provider as emergency services are considered outpatient care (CMS, 2017a). This assignment means that the ED provider is responsible for all screenings and follow-up care associated with the patient, which many facilities may not be equipped to do, and many physicians may not be comfortable in

doing. Exacerbating this issue is the vast increase in urgent care, freestanding EDs, and telehealth options where a patient's needs—at least perceived immediate needs—may be met in a timelier fashion than that of waiting to see a primary care provider and subsequent specialties and subspecialties (Ward & Canares, 2017). PG1 found that by increasing the efficiency and throughput process of the ED, where resources and the ability to capture the patient into primary care are most considerable, allowed a higher percentage of patients attributed to primary care who have the capability of meeting the quality measures and not the ED providers.

As the Process Improvement Team (PIT) process is dependent on data-driven identification and subsequent solutions, it is critical to have clean and accurate data. As this is a national company involving thousands of different healthcare and ancillary companies, this involves the manipulation of big data across a national platform. Analyzing complex data remains elusive without a sound fundamental theory for representation, analysis and inference, and a standard by which data is represented consistently in a usable and understandable form (Dinov, 2016). Though PG1's Information Technology team is responsible for the interface feeds, PG1's Data Team pulls and manipulates the flowing data into usable reports for leadership to make decisions on—including strategy and in this case deployment of the PIT. PG1 defines their data team as a combination of data experts versed in quantitative, qualitative, and mixed methods, as well as clinical informaticists to add the clinical perspective and filter. Sahoo, Mohapatra, and Wu (2016) support this mix and the analytical approach to analyzing both structured and unstructured data generated from healthcare management systems for a baseline understanding and future modeling. It is the role of this team to

ensure that the necessary level of granularity, the correct data source, and the application of the appropriate statistical analysis in an unbiased manner to ensure data integrity.

PIT deployment occurs when there is the identification of an outlier facility to a given division or national goal. The facility or the division—the division of a given state—may also deploy PIT when there is a provider or specific process the is an outlier or is in deviation. The PIT looks at the entirety of the continuum of care from the time the patient enters the facility to the time they are admitted or discharged. Taking a multi-faceted and poly-variable approach is critical to the understanding of complex healthcare environment pressures on patient outcome and patient/family and care team interactions (Hartwell, Albanese, Retterer, Martin, & O'Mara, 2016). The primary metrics that the PIT examine when looking at ED throughput are (a) patient arrival to staff greet, (b) patient arrival to ED bed, (c) provider greet to first order, (d) patient arrival to discharge order, and (e) patient arrival to admission order. It is worth noting that every series of measures for the ED and all interfacing departments (i.e., radiology, laboratory, operating room, valet, security) are also consistently measured to this level of granularity. The metrics are finite enough that a value stream map is possible on any given patient, any given provider as a series of means, or by any department as a series of means for any date or time range desired. Steps within the stream that are non-value added, considered to be waste, or are elongating the door to admission or door to discharge times become targets for improvement.

Improvement methodologies are not limited to any given strategy; however, LEAN Six Sigma, value stream mapping, tabletop exercises, best practice replication, and modeling are most common within PG1. PG1 identifies the team members as the

most important toolbox available, as the team members bring unique expertise that may be required—the selection of team members is critical to long-run success. The leadership of PG1 finds that even distribution of the workload across improvement team members increases buy-in and collaboration as the polarization of the load may yield isolation of the needs of the heavier load and severance of the needs of those doing less. Sustained quality improvement activity remains a challenge, though interdisciplinary teams improve the sustainability of continuous quality improvement activities in the control phase (Rao, Carballo, Cummings, Millham, & Jacobson, 2017). Though there is a sense of urgency that may bias the deployment of the PIT, PG1 looks at process improvement as an interactive process through sustainable multidisciplinary teams and not a flash-burn approach.

Primary activity units within the activity system include the director of clinical services as the lead of the PIT, the Data Team, the hospital, and the ED. Figure 13 outlines the key components within the activity system as well as history, culture, associated internal contradictions, and associated external contradictions. Primary internal contradictions focus on factors that were not considered initially and may negatively impact patient experience to decrease throughput times—a specific example of this is valet parking. Primary external contradictions focus on external partnerships for which PG1 is in contract or joint venture with and sometimes competing priorities and visions.

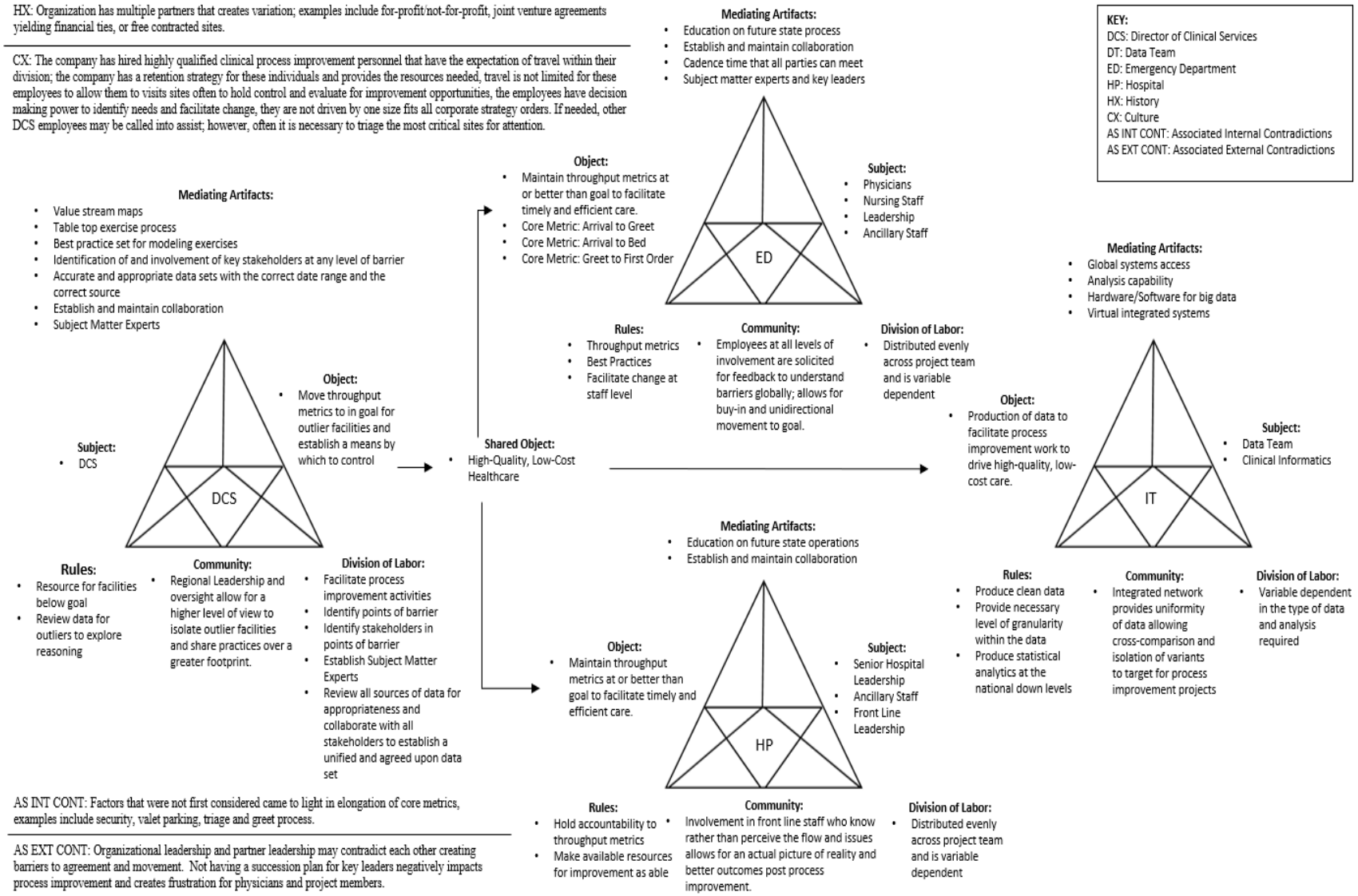


Figure 13. PG1: Quality/cost strategy: Iterative Emergency Department throughput process improvement with the goal to reduce the total length of stay and hyper-utilization.

PG2: National academic and non-academic for-profit physician group. A telephonic interview with a clinical health center leader of PG2 focused on one combined quality and cost strategy (see Figure 14) that the leadership took from formulation to implementation with significant success within the data collection period. PG2's primary history driving the need for strategic change was multifaceted including the need to continuously improve quality, unify the existing partnerships toward the same goal, and drive profit margins and fiscal sustainability for both for-profit joint ventures and not-for-profit collaboratives. PG1 is a national physician group spanning the continental United States that supplies physician services to existing healthcare facilities across multiple healthcare specialties and subspecialties and multiple platforms including physical and telemedicine physicians. Under the QPP, there is a significant risk of financial loss due to the sheer volume of the company and the fact that the physician is the primary driver of meeting or failing to meet MIPS measures. Exacerbation of this risk profile is not increased as a result of the telemedicine service line as a primary provider must initiate the telemedicine consult.

PG2 has a culture of iterative process improvement as PG1—also in line with Smith et al., (2018) findings, one that is not passive or reactive but rather proactive in identifying specific areas that are or may become problematic that may drive down quality or produce cost waste. PG2 also has highly qualified clinical process improvement personnel who are a sine qua non to the companies overall success in devising and implementing strategies—especially that of quality improvement and cost reduction. Unlike PG1, PG2 has a higher level of physician involvement in the decision-making process. PG2 also invests considerable resources in the retention of these

employees, gives them freedom over the evaluation process, identification of improvement opportunities, and the power to facilitate change. A one size fits all corporate strategy is also not the PG2 way, rather there is a standardized base with flexibility given existing variables at each site. This foundation is in line with PG1, PG3/H1, H1, and CE-PG4 foundation with flexibility model.

PG2's quality/cost strategy identified in the interview focuses on the ED standardization of sepsis care in both the emergency medicine and hospitalist service lines. PG2 and the associated facilities and companies have placed sepsis at the forefront of quality care and cost management to reduce the overall mortality rates and to minimize the reimbursement loss of common readmissions in patients with this diagnosis. Work focuses on streamlining and hard-wiring a process that mitigates the possibility for failure in an exceedingly complex set of requirements. The Sepsis Core Measure and the associated diagnosis and initiation of treatment begin with a lactate > 2, and organ dysfunction defines the severity; severe sepsis involves sepsis plus one or more variables of organ dysfunction, given in Table 2 (Santistevan, 2018). Clinicians may also initiate treatment under suspicion of sepsis using the definition of two Systemic Inflammatory Response Syndrome criteria plus suspected infection (Santistevan, 2018; Seymour, 2016).

Table 2

Systemic Inflammatory Response Syndrome Criteria and Organ Dysfunction Variables

SIRS Criteria	Organ Dysfunction Variables
Temp >101	SBP < 90
Temp < 96.8	MAP < 70
HR > 90	SBP decrease > 40 from known baseline

RR > 20	Cr > 2.0
WBC > 12,000	UOP < 0.5 ml/kg/hr for > 2 hours
WBC < 4000	Bilirubin > 2.0
> 10% Bandemia	Platelets < 100,000
	INR > 1.5 or PTT > 60 secs
	Altered Mental Status
	Lactate > 2

Other clinical factors involve both the ED and the hospital providers in the management of the septic patient and tie to the CMS core measure. CMS defines septic shock as severe sepsis with hypoperfusion despite adequate fluid resuscitation or a lactate > 4 (Santistevan, 2018). To be compliant, the patient must have within three hours of arrival, a measure of serum lactate, blood draw of blood culture before the administration of antibiotics, and the administration of antibiotics; within six hours, the provider is to order repeat lactate (Santistevan, 2018). For septic shock, all above remains true for the three-hour requirement but adds resuscitation with 30mL/kg crystalloid fluids, and for the six-hour requirement changes the cadence lactate to a repeat of volume status and tissue perfusion assessment and vasopressor administration if hypotension persists post fluid administration (Santistevan, 2018). The repeat of the assessment of volume status and tissue perfusion required for patients with septic shock must include a focused physical exam including:

1. Vital signs
2. Cardiopulmonary exam
3. Capillary refill
4. Peripheral pulse evaluation
5. Skin exam

Alternatively, any two of the following:

1. Central venous pressure
2. Central venous oxygen
3. Beside cardiovascular ultrasound
4. Passive leg raise or fluid challenge (Santistevan, 2018; Seymour, 2016)

It is of note that patients who are transferred from another acute-care facility, those placed on comfort care, or those who die within three hours of severe sepsis presentation or within six hours of septic shock presentation are not subject to this measure (Santistevan, 2018).

PG2's strategy is to create and trend bundle compliance for order sets, assigned specific duties to each clinical type (i.e., nurse, physician, or pharmacist), and set expectations of providers and staff to adhere. All staff, including providers contracted by a third part company, are operating under the same hospital-based policy and procedure. The overhead paged "Code Sepsis" is also used to notify all key stakeholders of the arrival of a potentially septic patient to trigger all components of the strategy simultaneously. The provider immediately assesses the patient, and initiates the bundle set orders should sepsis be suspected. Should the provider feel that the patient is not a sepsis patient, he or she must use the EV1000 to calculate a cardiac output on the patient as this is the determining factor by which the hospital holds providers accountable to clinical decision making on this diagnosis. The EV1000 system is a critical care monitoring that uses the principle of transpulmonary thermodilution and is considered best practice (Nakamura, Inokuchi, Hiruma, & Doi, 2015). It is notable that patients in renal failure connected to continuous venovenous hemodialysis and filtration circuit may

affect the temperature reduction of the thermodilution pathway resulting in an erroneous CO measurement, hence a thermodilution curve may artificially shift upward in the EV1000 system (Nakamura et al., 2015). If the provider and the EV1000 value are in agreeance, the provider may hold the orders and document appropriately. Should the provider feel the patient is a candidate for sepsis, orders are placed in the electronic health record and electronically time-stamped, as are medications acknowledgments and administration, thus can be retrieved along with the arrival time to verify bundle compliance and time compliance. This capability along with a culture of data-driven decision making allows for quick early and mid adoption and consistent accountability. For those that elect not to adhere and fall to the outlier range, PG2 and its affiliates are not afraid to terminate the relationship with the provider or staff member as they represent an increased risk to the patient and entity from both the quality and cost perspective. A process improvement plan is part of the intervention process to avoid this end. Li et al. (2015) suggested that a mentor helps in driving overall quality improvement efforts, especially in the healthcare industry.

Initial barriers to implementation included provider recalcitrance to "mandates on how to practice medicine" and using the EV1000. To overcome this barrier, education on the academic findings resulting in the CMS requirements assisted in the clinical practice component. This finding was especially true in using peers from the academic sister facilities as part of the education process and is in line with the use of mentorship as suggested by Li et al. (2015). Mandating the use of the EV1000 assisted in the use; however, providers actively seeing the benefits after the adoption phases have resulted in

the providers asking for additional information and tools to assist in the quantitative decision matrix process.

PG2 has a "fall-out" cadence meeting in which all key stakeholders meet to examine all patients that fell outside of the normal parameters or expired. This meeting is an opportunity to explore what went wrong, what went well, and how the people, processes, and systems may be improved to serve the patient better, reduce costs by examining readmission rates, and prevent future fall-out patients. The debriefing process has many evidence-based methods; however, the fundamental purpose is to identify key components of success for replication and failure for improvement (Waznonis, 2014). The ability to pull reports out of the electronic health record allows for immediate feedback should a fall-out occur. Immediate feedback is the responsibility of the onsite care coordinators.

Vermeulen (2018) made clear that the contemporary healthcare industry is one of ACA uncertainty that has a lack of clear direction. Vermeulen concluded that it is under these conditions that strong, deliberate, and disciplined strategic planning is critical to the success of leaders charged with the stewardship of healthcare delivery. PG2 strategic initiatives derive from annual strategic planning summits and quarterly implementation summits. Annually, PG2 involves all key stakeholders in corporate, operations unit, divisional, and facility levels to engage in identification of key strategic initiatives for the following year and to develop the components necessary to bring them fruition. Quarterly implementation summits allow the opportunity to ensure milestones are met, but also to alter course if necessary to be adaptable to potentially changing circumstances. This strategy is in line with the overall culture of having a firm foundation with the

freedom of some flexibility. Both the annual strategic planning and the implementation summits involve any existing partners to ensure that both entities are in alignment.

From an admission and a hospitalist standpoint, PG2 found it constant that treatment times and mortality rates are proportional. The lower the door to treatment time is, the lower the mortality rates in both the ED and the duration of the hospital stay—excluding comorbidities and those patients that meet exclusion criteria from the measure. This finding is in alignment with Seymour et al. (2016) assessment of clinical criteria and intervention for sepsis. For patients diagnosed with sepsis, for those that receive earlier treatment in the ED, PG2 found the total geometric length of stay trends down. This finding ties PG1 and PG2 as barriers to throughput may yield elongation of activation of the Code Sepsis and subsequent treatment and drive up mortality rates and failure to comply percentages for bundle, antibiotic, and CMS core measure requirements. It is of note that this possibility is proven to be true in PG2's national pre- and post data.

Primary activity units within the activity system include the ED provider, the hospitalist provider, the hospital, and the ED. Figure 14 outlines the key components within the activity system as well as history, culture, associated internal contradictions, and associated external contradictions. Primary internal contradictions focus on the difference in success rates in the early adoption phase of the implementation. Smaller facilities have a higher success rate than the more extensive facilities, at least in the beginning as they have a much more established communication system and a tighter community. No primary external contradictions are noted.

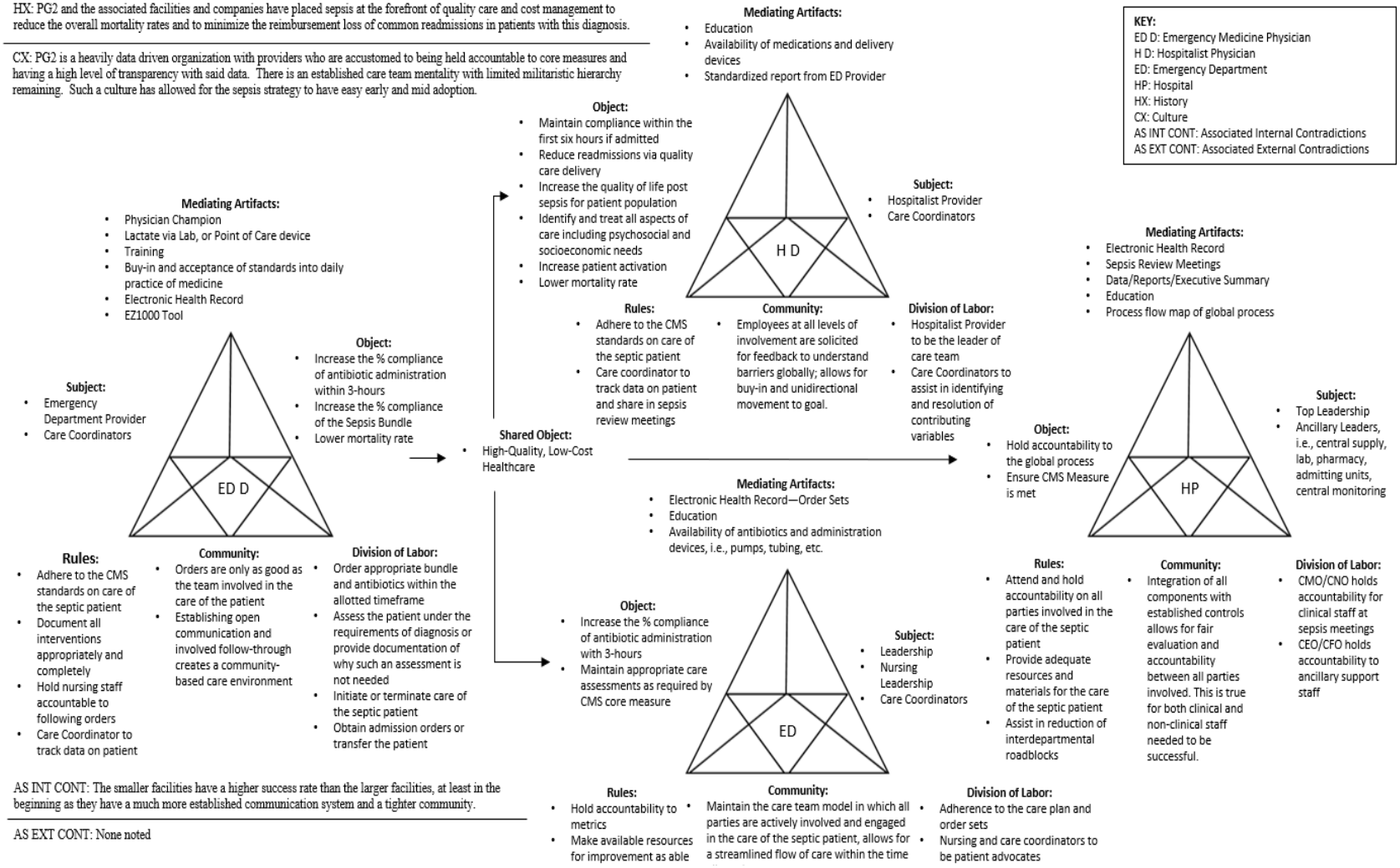


Figure 14. PG2: Quality/Cost strategy: Implementation of the sepsis bundle and antibiotic administration compliance in the Emergency Department with the goal to reduce mortality rates and readmission rates.

PG3/H1: International academic and non-academic for-profit physician group and rural for-profit hospital. A telephonic interview with a clinical health center leader of PG3/H1 focused on one combined quality and cost strategy (see Figure 15) that the leadership took from formulation to implementation with significant success within the data collection period. There is a discussion on both the facility level and divisional level implementations; however, due to duplication of the majority or process within the CHAT-III framework, only the hospital implementation is mapped. Discussion of the divisional level implementation strategy is in parallel to that of the hospital-based implementation. PG3/H1's primary history driving the need for strategic change was multifaceted including the need to continuously improve quality, unify the existing partnerships toward the same goal, and drive profit margins and fiscal sustainability for both for-profit joint ventures and not-for-profit collaboratives. PG3/H1 is a national physician group spanning the continental United States that supplies physician services to existing healthcare facilities and has an international outreach program that provides free heatlhcare services to patients across the world that would have no access to healthcare otherwise. The international outreach program includes but is not limited to bring patients to the United States for treatment, deployment of providers and staff outside of the United States via partnerships, and using donations and allocated charity funds to care for those in need. Under the QPP, there is a significant risk of financial loss due to the sheer volume of the company and the fact that the physician is the primary driver of meeting or failing to meet MIPS measures.

PG3/H1 has a culture of iterative process improvement as PG1 and PG2, one that is not passive or reactive but rather proactive in identifying specific areas that are or may

become problematic that may drive down quality or produce cost waste. Thus, PG3/H1 is also in line with Smith et al. (2018) finding that the iterative process improvement model is a growing trend in healthcare centers to drive service quality and health outcomes, cost reduction strategies, and unification of comprehensive care team modeling. PG2 also has highly qualified clinical process improvement personnel who are a sine qua non to the companies overall success in devising and implementing strategies—especially that of quality improvement and cost reduction. PG3/H1 also invests considerable resources in the retention of these employees, gives them freedom over the evaluation process, identification of improvement opportunities, and the power to facilitate change. A one size fits all corporate strategy is also not the PG3/H1 way, rather there is a standardized base with flexibility given existing variables at each site. This foundation is in line with PG1, PG2, and H2's foundation with flexibility model.

PG3/H1's process improvement focuses first on a rural, non-academic, for-profit hospital that is part of a national network of hospitals. Identification of new standards of care by a facility owned cardiologist allowed an opportunity for improvement in the quality of care for the patient with acute myocardial infarction (AMI). CMS core measures (AMI-1-10) for AMI include:

1. Asprin upon arrival
2. Aspirin prescribed at discharge
3. Administration of an angiotensin-converting-enzyme inhibitor or Angiotensin II Receptor Blocker for left ventricular systolic dysfunction
4. Adult smoking cessation advice/counseling
5. Beta-Blocker prescribed at discharge

6. Median time to fibrinolysis
7. Fibrinolytic therapy received within 30-minutes of hospital arrival
8. Medan time to primary percutaneous coronary intervention
9. Primary percutaneous coronary intervention received within 90-minutes of hospital arrival
10. Statin prescribed at discharge (Anderson & Marrow, 2017; Joint Comission, 2018)

PG3/H1's quality/cost strategy identified in the interview focuses on the ED's response to AMI patients with the goals of ensuring an electrocardiography exam (EKG) is performed within 5-minutes, aspirin administration occurs within the first hour, and thrombolytics occur within 60-minutes should they be indicated. Upon division level implementation, these same measures remain true. Interventions for AMI are in line with Anderson and Morrow's (2017) findings for management strategies and antithrombotic therapy best practices in the patient with AMI with or without ST-segment elevation. Like OC1, PG3/H1 resolves resistance to implementation of this strategy by taking the time to explain the "why" behind the necessity for change and that it is not financially based, rather a proven methodology to lower mortality rates and drive better outcomes for the patient.

PG3/H1 finds that early identification of patients with possible AMI in the triage setting is often a challenge as not all patients present with the same symptoms. It is not sufficient to assume that the patient will complain of chest pain if they are in an active AMI. Other inclusion criteria for PG3/H1 are cardiac arrhythmia or palpitations, hypotension/hypertension, diaphoresis, chest or left arm pressure, acute onset of

dizziness, fatigue, shortness of breath, or a feeling of impending doom. These additional tertiary signs and symptoms are also in line with Anderson and Morrow's (2017) suggestions for best practice. Upon the identification of a possible AMI, a series of pre-assigned tasks begin to take place. A Code AMI is paged overhead, nursing starts an IV and administers aspirin per provider order, respiratory therapy comes to the bedside to perform an EKG, and the provider comes to the bedside to order appropriate interventions and interpret the EKG. If the interpretation of the EKG results in a positive AMI, the Cath Lab is activated, consent for thrombolytics is signed if not otherwise contraindicated, and consent for primary percutaneous coronary intervention is signed should the patient consent.

Following all AMI patients, a debrief is required while all involved players are still available and the event is fresh in their minds. Key components to answer are what went well, what did not go well, how do we improve for the next patient. Like PG2, PG3/H1 is also consistent with Waznonis (2014) in effectively using the debriefing process. The debrief is an open environment for sharing and learning. Like PG2, PG3/H1 has a "fall-out" cadence meeting in which all key stakeholders meet to examine all patients that fell outside of the expected parameters or expired. This meeting is an opportunity to explore what went wrong, what went well, and how the people, processes, and systems may be improved to serve the patient better, reduce costs by examining readmission rates, and prevent future fall-out patients. Unlike PG2, the debrief document is considered during the meeting to examine the perception and mindset of the care team at the time of the event taking place.

PG3/H1's implantation of this strategy brought all core metrics into compliance at 100% within two months. Primary barriers include the ability of clinical staff to recognize the symptoms of AMI if they are not obvious, the over-activation of the Cath lab team, communication issues between the ED and the Cath lab, and the Interventional cardiologist arriving within the allotted time frame. To overcome these barriers, PG3/H1 actively engages in interdepartmental meetings to open the lines of communications while the hospital leadership acts as a mediator. Also included are new restrictions on living distance and expectations for retained interventional cardiologists. Chen, Chu, Torbati, Lange, and Henry (2017) suggested that pre-hospital activation of the cath lab also trigger a cardiology fellow to assess the patient in the ED to make the final decision on proceeding with the emergent catheterization. This tactic assumes a fellow is present and may not apply to all healthcare centers based on resource availability—as is true in this case. On the divisional level, the question is of consistency across variations in resources and patient volume. PG3/H2 consistently resolves this issue using order sets and setting clearly defined expectations on all components of implementation as well as ensuring the ability to hold accountability through the fall-out cadence meetings. Data are available across the division at all sites which hold both the providers and the leadership at the facility level accountable and allows for the identification of outliers that may require intervention. The culture of a strong foundation with flexibility is invaluable in this strategy. The foundation, in this case, is the standard of care; the flexibility is how each facility arrives at compliance.

Primary activity units within the activity system include the ED, the Cath Lab, the hospital, and respiratory therapy. Figure 15 outlines the key components within the

activity system as well as history, culture, associated internal contradictions, and associated external contradictions. Primary internal contradictions focus on the variation in resource availability and existing physician contracts limited some facilities from meeting the goals at the division level. Also, variation in individual policy at the facility level required modification into a standard of care at the division level. Primary external contradictions focus on education and relationship building thought to be in place with the emergency medical services (EMS) teams; however, is often found that there are delays in transport to allow the paramedic to do low-level interventions (i.e., nitroglycerine administration, IV placement) that stand to impact the overall outcome of the patient negatively. PG3/H1 overcomes this at the facility and the divisional level by instituting active education and involvement of EMS leadership with AMI and other focused care models. PG3/H1 finds that this process improves the overall knowledge base, and enhances the communication and understanding of each point of view for both the hospital and for EMS.

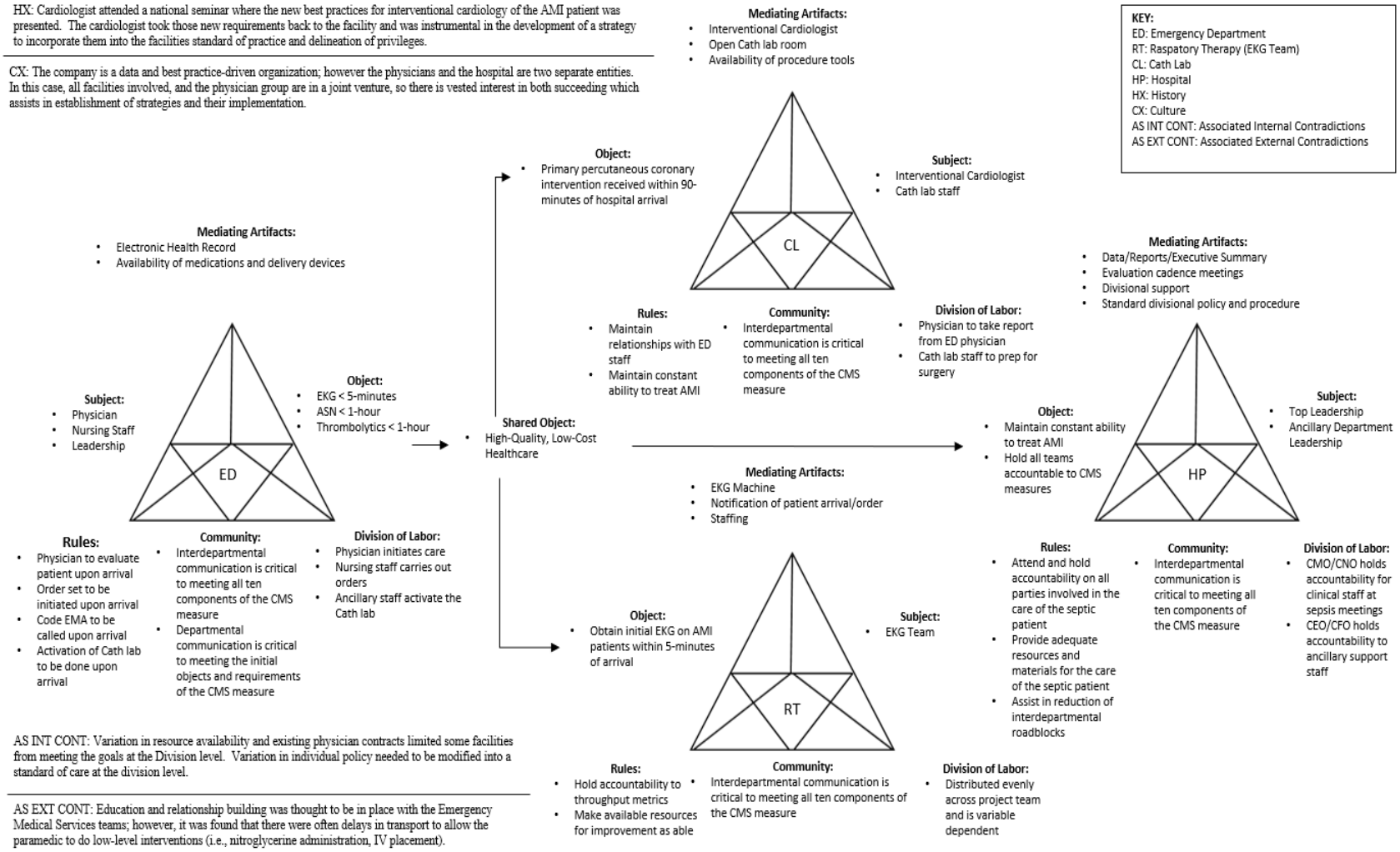


Figure 15. PG3/H1 Quality and Cost Strategy: Implementation of AMI standards of care at the facility and the divisional levels with the goal to reduce cardiac-related mortality rates and decrease the cost of readmission and prolonged admission.

H2: Non-academic not-for-profit academic and non-academic hospital and outpatient system. A telephonic interview a clinical health center leader of H2 focused on one quality and one cost strategy, Figures 16 and 17, respectively, that the leadership took from formulation to implementation with significant success within the data collection period. H2's primary history driving the need for strategic change was a constant drive to improve overall quality and cost of care delivery and meet the requirements of the entirety of the payor mix to maximize reimbursement. H2 is a not-for-profit, academic and non-academic mixed localized hospital network, established in the 1800s, comprised of three hospitals and multiple outpatient clinics. H2's primary focus is on the community and overall health of that community rather than the traditional focus on the health and wellbeing of only those within the walls of their facility. Under the QPP, there is a significant risk of financial loss due to the facility contracting their providers. Thus they incur both the facility and the provider risk profiles.

H2 has a culture of iterative process improvement as PG1, PG2, and PG3/H1; one that is not passive or reactive but rather proactive in identifying specific areas that are or may become problematic that may drive down quality or produce cost waste. H2 does not employe specific process improvement personnel as PG1, PG2, and PG3/H1; rather the thought process is more in line with OC1 in which there is high-level oversite with improvement projects based on need and subject matter experts engaged as needed to be a part of the improvement process. An annualized strategy formation process is in line with Vermeulen' (2017) recommendation for purposeful and tactical strategy. A one size fits all corporate strategy is also not the H2 way, rather there is a standardized base with

flexibility given existing variables at each site. This foundation is in line with PG1, PG2, and PG3/H1's foundation with flexibility model.

The Joint Commission reports that greater than two-thirds of all operative adverse events are the result of poor communication (Criscitelli, 2015). H2's quality strategy identified in the interview focuses on the operating room team and the obstetrics and gynecology team pre- and posthuddle for the complex care patient. For all patients that fall into a high-risk category for any surgery or admission, the entire care team, including social work, meet for a prehuddle before the surgery or admission to discuss anticipated needs, answer any questions anyone has, set everyone on the same vision and mission for the patients care, and ensure that all concerns have resolution. This strategy is in line with both Criscitelli (2015) and Sivarajan, Nawathe, Olshove, and Phillips (2016) findings that such huddles reduce communication issues, mortality, and adverse outcomes. The leaders of H2 expect that all members of the care team not only participate in the huddle but have a clear understanding of why they are doing the huddle and the implications of quality and waste reduction for the patient and the facility. H2 see the quality outcome and strategic approach to care as the same; thus the huddle is the strategic approach to drive quality care before the surgery for that patient, and the post-huddle is the strategic approach to drive quality care for all patients that come after.

In the huddle strategy, all parties are equal regardless of title, and any member of the care team may initiate a huddle, who acts as the leader. Though the provider is often the leader, that is not always the case, and the huddle is a space of nonjudgment and open expression. The microcommunity within the huddle is one of mutualistic respect. The core care team consists of the providers, nursing, and ancillary staff; but may also involve

any member from any service or unit that is participating in the care of that particular patient. In examining all components that could lead to a higher risk of mortality, mortality itself becomes the identifying lens for key players. Those that have control over the high-risk components are required to participate. The existing protocol for a huddle is less than 10 minutes and asks, what is the risk and how do we address the risk, thus the huddle team is looking to identify any alternative solutions to the one proposed. Standardized meeting structures is a key component and an additional suggestion by Criscitelli (2015) to drive this strategy. Metrics used to determine success are across the quality continuum (i.e., patient satisfaction, central line-associated bloodstream infection) at the individual patient, provider, and staff levels. All components of care are a part of the decision structure to identify trends to ensure goal attainment for all stakeholders in an open, transparent way; all staff is aware of all other staff's metric performance. H1 found the data strategy is equally important as the huddle. The total length of stay continues to decline as the huddle strategy allows identification and solutions to variables that extend the total length of stay.

H2 found that the existing culture required very little change to implement the huddle strategy as the existing culture is one of constant process improvement to meet care standards and drive down costs in a meaningful way. The culture is one of active collaboration with a firm foundation in policy and procedure, but flexible enough to embrace change. H2 also has consistent support form the top down, including the board. This support comes with expectations, in that all decisions that are made to alter any practice at H2, the proposed change must meet existing quality standards, it must meet cost-effectiveness standards, and it must represent better outcomes to the care of the

patient or the community. Though there are times where staff are recalcitrant to the call of a huddle, the support of upper-level leaders ensure that the caller has the support necessary to remind the resisting employee that this is not optional. Per H1, adherence is purely culture driven.

Primary activity units within the activity system include the obstetrics and gynecology unit, the operating room, the hospital, and the social work team. Figure 16 outlines the key components within the activity system as well as history, culture, associated internal contradictions, and associated external contradictions. Primary internal contradictions focus driving adherence. Primary external contradictions focus on vendor relationships.

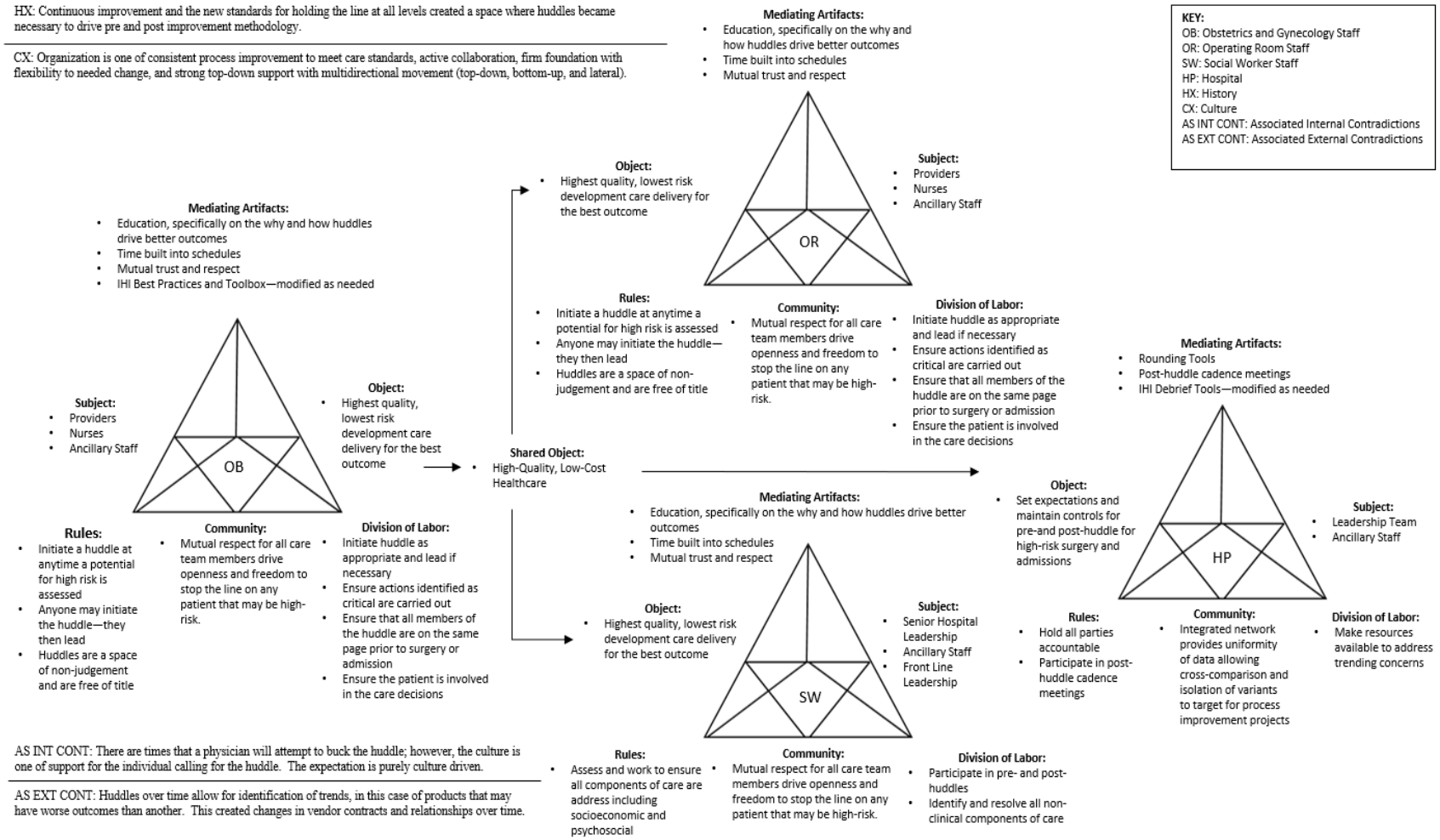


Figure 16. H2 Quality Strategy: Implementation of pre- and posthuddles for high-risk surgery and admission patients with the goal of reducing the total length of stay and driving the highest quality, lowest risk development care delivery for the best outcomes.

Logistics within the hospital division account for 30% to 40% of the total annual budget when considering spending per beneficiary the total cost of care for healthcare centers include all services rendered by services external to the group in addition to all associated costs for outpatient care delivery (Landry et al., 2016). H2's cost strategy focuses on procurement and assessment of product lines used in the care of all patients within the facilities. The approach of H2 when evaluating new products or replacement products is not one of how can we make it cheaper, instead, it is how can we make it more equitable. H2's leadership are cognizant of cost, but not to the detriment of quality. A specific example is: a product is $1.00 cheaper, but due to quality issues, it takes two of each item to do the same job. In this example, the actual cost is higher and the opportunity cost due to lost clinical time in retrieving the second is higher than that of paying for the higher quality device. The strategy to asses product lines at H2 involves a multidisciplinary value-analysis committee that evaluates all products for the best overall value in both clinical care and total cost as opposed to only one view. When H2 evaluates a new product, the leaders ask, can we demonstrate this product is the best value for the patient and the company and what is the cost to the patient with each product and what is the cost to the company. By asking these questions with equal weight, the selection is equitable.

All products are piloted within the facility to test the projection models presented to the value-analysis committee. This process allows feedback from those that will be using the product and tests the product in each facility as a unique setting. Testing products in this way allow for a mixed methods approach between the cost analysis and clinical impact analysis and the phenological perception of those using the product.

There is a standardized evaluation tool for all products to ensure equal evaluation. Feibert and Jacobsen (2015) found that performance measures for logistics are critical in managing and controlling logistics, at the heart of which is a framework for decision making and track and trace technologies; Randall et al. (2015) noted the increasing use of performance-based logistics in multiple industries including healthcare. All parties and all thoughts are treated with equality, respect, and are within a just environment.

Vendors are expected to provide training and be available on all shifts and all days. Roll-outs of pilots are as critical regarding education and understanding as those that are permanent additions. Products that may impact other products, i.e., IV pumps and IV tubing, are not exclusively evaluated; however, in consideration of price, this may negatively impact the decision of one over the other which would exclude both. H2's strategy is in line with Laundry, Beaulieu, and Roy's (2016) three primary strategies proven to reduce logistics costs, (a) avoidance of the quick win tool-based approach in lieu of long-term reflection and creating of space for emergence to occur, (b) selection of strategies to deploy with strategic intent rather than benchmarking and copying other institutions, and (c) utilization of external resources or new materials managers to take a fresh approach to logistics issues.

Primary activity units within the activity system include the value-analysis committee, the hospital, and all employees, and the vendor. Figure 17 outlines the key components within the activity system as well as history, culture, associated internal contradictions, and associated external contradictions. Primary internal contradictions focus on contract contradictions or products that are not on the existing purchasing agreement. No primary external contradictions are noted.

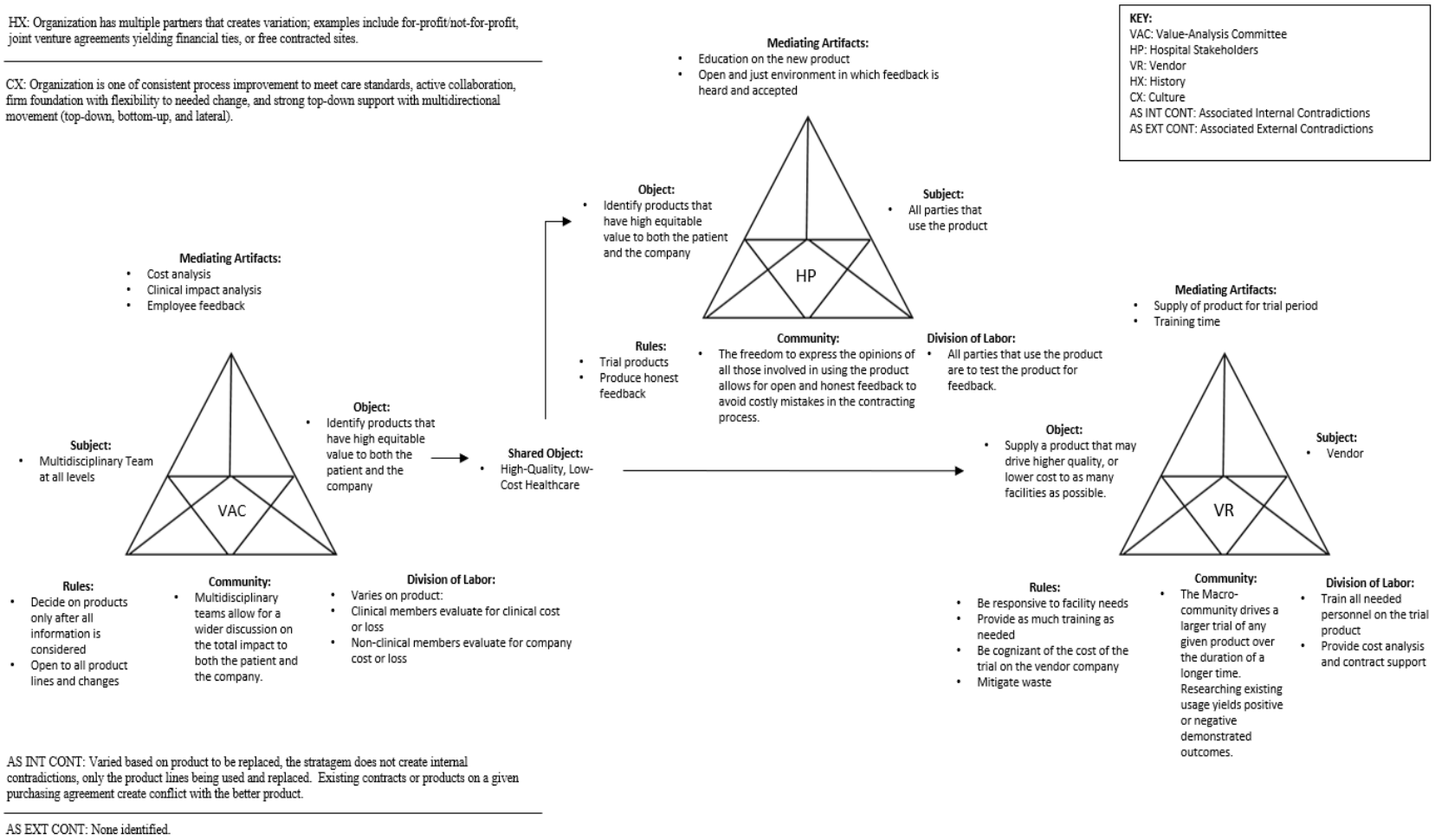


Figure 17. H2 Cost Strategy: Evaluation and trial of product lines with the goal of identifying products that have high equitable value to both the patient and the company.

CE-PG4: National academic and non-academic for-profit healthcare conglomerate. A telephonic interview with an operations/business health center leader of CE-PG4 focused on one combined quality and cost strategy (see Figure 18) that the leadership took from formulation to implementation with significant success within the data collection period. CE-PG4 2's primary history driving the need for strategic change was multifaceted including the need to continuously improve quality, unify the existing partnerships toward the same goal, and drive profit margins and fiscal sustainability for both for-profit joint ventures and not-for-profit collaboratives. CE-PG4 is a national physician group spanning the continental United States that supplies physician services to existing healthcare facilities across multiple healthcare specialties and subspecialties and multiple platforms including telemedicine physicians. Under the QPP, there is a significant risk of financial loss due to the sheer volume of the company and the fact that the physician is the primary driver of meeting or failing to meet MIPS measures. Exacerbation of this risk profile is not increased as a result of the telemedicine service line as a primary provider must initiate the telemedicine consult.

CE-PG4 has a culture of iterative process improvement as PG1, PG2, PG3/H1, and H2—also in line with Smith et al. (2018) findings, one that is not passive or reactive but rather proactive in identifying specific areas that are or may become problematic that may drive down quality or produce cost waste. CE-PG4 also has highly qualified clinical process improvement personnel who are a sine qua non to the companies overall success in devising and implementing strategies—especially that of quality improvement and cost reduction. Unlike PG1, CE-PG4 has a higher level of physician involvement in the decision-making process. CE-PG4 also invests considerable resources in the retention of

these employees, gives them freedom over the evaluation process, identification of improvement opportunities, and the power to facilitate change. A one size fits all corporate strategy is also not the CE-PG4 way, rather there is a standardized base with flexibility given existing variables at each site. This foundation is in line with PG1, PG2, PG3/H1, and H2, a foundation with flexibility model.

Clinical quality indicators outlined by MACRA represent 60% of the total aggregate score to assess for penalty or incentive payments (MACRA, 2015). Many quality indicators are assuming the presence of primary care providers; thus primary care demand is increasing sharply with the aging population exacerbating this need, yet there is a shortage of primary care providers in the United States (Brislen et al., 2016; Morgan et al., 2017; Petterson, Liaw, Tran, & Bazemore, 2015). Utilization of midlevel providers is a means by which healthcare institutions may increase the provider availability and reduce total cost of full-time clinical equivalents (Alsharif et al., 2016; Senqupta et al., 2015). CE-PG4 is a provider contracting service that works with their partners to provide physicians and mid-level hours for both inpatient and outpatient services. CE-PG4's cost/quality strategy focuses on the transition of physician hours per day to mid-level hours to reduce operational costs and to reduce subsidies that are required by their partners to compete with their competitors within the market share. Primary operational costs for the business model are for independent contractors and employees; thus transition of a more expensive physician hour to a less expensive mid-level hour lowers the total operational cost and subsequently the subsidy. The ratio of cost for physician: midlevel in the ED setting is 3:1, in the inpatient setting, is a 2:1 ratio. This strategy is in line with the findings of Alsharif et al. (2016) and Senqupta et al. (2015).

Due to the increased demand and the shortage of primary care in the United States combined with the ability to reduce the overall cost of heatlhcare and drive down the percent of gross domestic product involvement, many states are relaxing the supervision and prescriptive authority laws for mid-level providers (Johnson, 2015). Both physician assistants (PA) and APRNs are options for mid-level utilization. CE-PG4 uses both interchangeably to fill assigned mid-level hours. It is of note that PAs practicing in primary care have declined from 50% in the 1990s to 30% in 2013 (Morgan et al., 2017). This finding is juxtaposed for APRNs in that The American Association of Nurse Practitioners (2017) reported 234,000 APRNs licensed in the United States, 49.9% of which hold hospital privileges, 11.3% long-term care privileges, 89.2% certified in an area of primary care, 3 in 4 are accepting new Medicare patients, 77.9% new Medicaid patients, and they average >3 patients per hour.

An annualized operational review identifies outliers through a financial lens which triggers an in-depth analysis of the provider mix. Analysis of the provider mix is unique for each site and involves the divisional leadership triad consisting of the operations/finance leader, the clinical physician leader, and the clinical nursing leader. To ensure attention to the independent variables that may impact total quality, requirements of credentialing or accreditation, and components of care delivery, the site medical directors and the hospital leadership are also involved in this discussion. The goal is to shift as many hours as possible from physician cost to midlevel cost. Productivity and cost are in constant balance without sacrifice of quality or safety.

Cadence meetings ensure financial, quality, and productivity control. Cadence meetings occur at all levels of the organization with transparency in data with all levels

looking at the same metrics and indicators. More, the data is shared between both the company and all partners to ensure an understanding across all departments and organizations. George, Haas, and Pentland (2014) suggested that big data conversations are predominantly practice driven; they may also drive value for individuals, business, and communities as well as help to predict outcomes. CE-PG4 uses big data to drive forecasting tools in the hour's transition process, but also to allow for value-added conversations for the providers. More clinical coverage is possible if lower costs provider hours are the standard for that extended coverage—they are an extension of the provider's ability to see patients in an efficient and high quality way. Big data and transparency of that data then become a tool by which CE-PG4 can not only make the needed changes but also demonstrate to the physicians that quality has not fallen as a result.

Primary activity units within the activity system include the divisional triad leadership team, the hospital leadership team, and the site medical director for the given service line. Figure 18 outlines the key components within the activity system as well as history, culture, associated internal contradictions, and associated external contradictions. No primary internal contradictions are noted. Primary External contradictions focus on competing goals and vision between the physician company and its hospital partners.

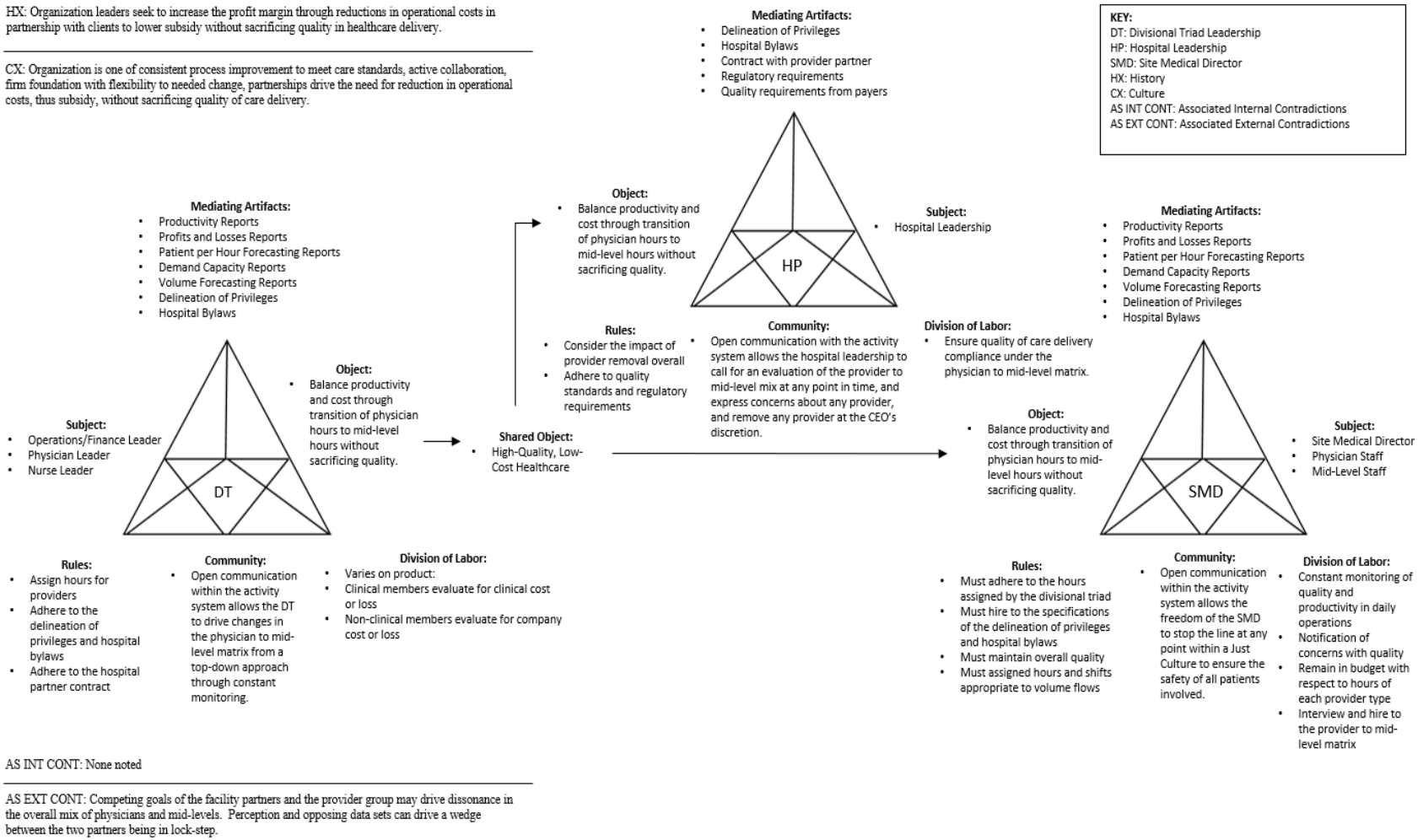


Figure 18. CE-PG4 Cost/Quality Strategy: Evaluation and transition of physician hours to mid-level provider hours to reduce overall operational cost without sacrificing strategy.

Global Multicase Study Themes

The Type III embedded multiple case studies design was appropriate for this study as embedded units of analysis for individual case studies (ICS) are used to focus on strategies that increased clinical quality (Yin, 2018), reduced total cost of care per capita, or were a mix that positively impacts both metrics. Thematic analysis and coding of interview transcripts is possible using NVivo software and was appropriate for this study. Codebook generation is in line with the linear process of strategy in that the existing culture, the formation process, the implementation process, and the control phase are in sequential order. Global themes (Table 3) for the organization include a foundational core with a flexible culture, an iterative process improvement culture, and Just Culture. Global strategy formation themes (Table 3) include an annualized process, quarterly cadence meetings cost first—quality benefit or quality first—cost-benefit approach and total employee involvement. Global implementation themes (Table 3) include the use of big data, data transparency, multidepartmental/organizational collaboration, and task-based implementation. Global control themes (Table 3) included c-suite cadence meetings and localized cadence meetings. Global findings and the frequency at which they occur are in line with the literature and the existing transition of healthcare to a blended model. Table 3 is a list of emerging themes and associated global frequency; global theme representation is demonstrated via check mark within each ICS with associated ICS frequency. As legislation generates increasing regulation that ties clinical outcome and the total cost to reimbursement to usher in truly sustainable value-based reimbursement models (Boudreaux & Vetter, 2016), it becomes critical for business

leaders to comply with quality and clinical leaders to comply with cost within an intertwined strategy.

Table 3

Emerging Global Themes and Frequencies (T = Total Frequency; S = Subset Frequency)

Emerging Global Theme	Global Frequency T | S	ICS Representation						
		OC1	PG 1	PG 2	PG3-H1	H 2	CE-PG 4	ICS Frequency
Organization Culture								
Foundational Core/Flexible	7.7% | 37.7%	√	√	√	√	√	√	100%
Just Culture	5.9% | 29.0%		√	√	√	√	√	83%
Iterative Process Improvement	6.8% | 33.3%	√	√	√	√	√	√	100%
Strategy Formation Process								
Strategy as an Annualized Process	2.4% | 10.0%	√	√	√	√	√	√	100%
Strategy Cadence Meetings	3.6% | 15.0%		√	√	√	√	√	83%
Cost First, Quality Benefit	2.4% | 10.0%	√				√	√	50%
Quality First, Cost Benefit	4.7% | 20.0%	√	√	√	√	√		83%
Total Employee Involvement	10.7% | 45.0%		√		√	√		50%
Implementation Process								
Big Data	10.4% | 21.5%	√	√	√	√	√	√	100%
Data Transparency	10.7% | 22.1%		√	√	√	√	√	83%
Multidepartmental Collaboration	15.1% | 31.3%	√	√	√	√	√	√	100%
Task-Based Implementation	12.1% | 25.2%	√	√	√	√	√	√	100%
Control Process								
C-Suite Cadence Meeting	3.0% | 38.5%		√	√	√	√	√	83%
Localized Cadence	4.7% | 61.5%		√	√	√	√	√	83%

Global Organizational Theme: Foundational core with flexible culture. Paro and Gerolamo (2017) posited that the implementation of process improvement would only be successful when aligned with organizational culture. Para and Gerolamo also found that most organizations have a dominant profile of the hierarchy culture

characterized by a highly structured formal format with rules and procedures governing the behavior of people. This type of culture may not be conducive to the travel goals of the organization. Thus the culture may need to change to align with the process improvement goal. Creation of a climate for change as defined by Kotter in the healthcare environment requires the establishment of a sense of urgency—a burning platform, the formation of a powerful guiding coalition, and the creation of vision (Teixeria et al., 2017). In the case of healthcare and healthcare centers, the burning platform is fiscal sustainability in the area of MACRA and the ACA.

In 100% of the independent case studies, the organizational culture contains a core of hierarchy as described by Para and Gerolamo (2017); yet could change and evolve as part of the foundation. The evolutionary component allowed the company to align with the process improvement aspect, driven by big data and Just Culture, then control those process changes through established policy and procedure and the existing hierarchy structure. Though OC1 has a weak upper leadership team and limited capacity from a corporate perspective, there is stronger leadership at the individual specialty division level. Thus replication of the foundational core with flexible culture is not represented holistically but is at each clinic site. PG1, PG2, PG3/H1, H2, and CE-PG4 all have a holistic foundational core with flexible culture from the top down, with upper leaders supporting the evolutionary components through process improvement to support identified strategies and, holding the core for the control phase.

Global Organizational Theme: Just culture. Ulrich (2017) defines the just culture is a culture of safety beyond that of just patient safety; the physical and mental

safety of nurses, physicians, ancillary staff, and other healthcare professionals is critical to the workers, but also the patient and their safety. A just culture has a foundation in data through reporting and open transparency, errors and systems issues are discussed in a nonpunitive environment where mistakes are an opportunity to learn, grow, and improve (Ulrich, 2017). Organizations may progress toward a just culture by honing five skills:

1. Adhere to values that support the organizational mission and vision
2. Create systems and process that are proactive to human behavior and incorporate a process that prevents errors
3. Empower employees to make correct choices and an environment where mistakes are opportunities for learning—using only corrective actions to shape undesirable behaviors
4. Ensure a reporting culture for all mistakes, regardless of harm to the patient, family, visitor, or employee to promote a globally understood continuous improvement process
5. Commit to differentiating mistakes from perverse disregard for normal procedure and commit to holding all staff members accountable when they have intentionally performed outside of protocol, including leaders (Kennedy, 2016)

In 83% of the independent case studies, there is existing just culture, with the OC1 currently in the process of rolling out their just culture strategy through the Team STEPPS program. Though they have some components in place, it does not represent a complete cultural transition. PG1, PG2, PG3/H1, and CE-PG4 all have hybrid models

where there is an organizational culture that transcends the single entity via unification of their culture and process as a melding of policies and procedures with their hospital clients. H2 has a consistent, just culture across all its inpatient and outpatient entities with leadership support in a top-down model. All entities use data within an electronic reporting system as a consolidation methodology for trending error types, employees, and specific areas to focus on education. All entities, save OC1, have strong leadership driving this culture with policies and procedures holding accountability for actions to be taken and the five skills identified by Kennedy (2016).

Global Organizational Theme: Iterative process improvement culture. The iterative process improvement culture is one of systematic problem solving on a continuous basis (Simon & Houle, 2017). Simon and Houle (2017) posited that when a combination of focus and purpose through strategic direction are alongside a culture of systematic problem solving, results are imminent. Critical to the iterative process improvement culture are leaders capable of problem-solving, employee engagement, complete visibility of organizational priorities, constantly improving system performance, visibility and awareness of the vision and defined measures that drive the healthcare system (Mahadevan, 2017; Simon & Houle, 2017).

Of the independent case study representation, 100% of cases have a culture of iterative process improvement. In all cases, big data assist in the isolation of areas of focus with outliers considered for the annualized strategy formation process. Though there are variants of the iterative process regarding methodology, i.e., LEAN, LEAN Six Sigma, 4 Disciplines of Execution, all participants have an articulated drive to continuous improvement. It is of note that the ACA and MACRA legislation did not initiate the

culture of process improvement as each company's culture predates this legislation. This finding as an organizational theme may demonstrate healthcare as an industry as it is based on a history of research to drive advancements in treatment and best practice.

Global Strategy Formation Theme: Annualized process. The basic precondition for quality and cost improvement is a fundamental understanding of the process of strategic planning and its regulation with regard to the goals and objectives that it should achieve (Holota et al., 2016). Though questions remain about the overarching impact of strategic planning on organization performance, studies suggest that it does play a critical role in strategy development, including how firms formulate major problems, set goals, analyze alternatives, and ultimately choose a strategy (Wolf & Floyd, 2017). Clark (2017) found that institutions that do not consider both the intended strategy and the operational requirements that are necessary to implement, healthcare organizations may fail to thrive in the new era. Hernandez (2018) found that strategic planning can be the start of improved and predictable results for the healthcare business, and that cadence within the strategic plan—including annual and interannual—that allows planning to become an ongoing process allows for competitive advantage and improves daily operations in healthcare business practice.

Of the independent case studies, 100% have annual strategic planning meetings and 83% interannual cadence meetings to allow flexibility, as suggested by Hernandez (2018). Utilization of an annualized cadence for strategic planning allows the participant's organizations to remain focused and on task from year to year and stack goals though annualized incrementalism. This strategy is in line with Holota et al. (2016) recommendation to make clear the goals to be achieved aligned to environmental

pressures that would degrade fiscal sustainability and quality care delivery. This process also allows the organizations to pivot as needed as legislation, requirements, and payer mix change. This pivot capability also helps in the multiorganizational collaboration process—noted in 100% of independent case studies—as it allows new partners to integrate with minimal disruption as both parties move to a lower cost and higher quality care model.

Global Strategy Formation Theme: Cadence meetings. Wolf and Floyd (2017) found that practitioners of strategic planning through practice and praxis generate both proximate and distal outcomes for their organizations. Wolf and Floyd provide examples of proximate outcomes; they include the quality of strategic decisions and overall effectiveness, communication, coordination, and integration. Distal outcome examples include overall organizational performance, strategic change, and renewal, strategic legitimacy evaluations (Wolf & Floyd, 2017). Utilization of careful planning and execution techniques allows institutions to maximize revenue, reduce expenses, grow their practices, manage risk, and increase patient and employee satisfaction (Clark, 2017). Annualized strategy process may not be enough, especially in a rapidly evolving industry such as healthcare.

Utilization of strategy cadence meetings within the year to support the annualized process is critical to the foundation of PG1, PG2, PG3/H1, H2, and CE-PG4. All leaders indicate the ability of their organizations to alter course when circumstances or conditions change, allowing them to be flexible and adaptable, yet remain true to the annualize goal set. This flexibility allows the organizations to respond to the persistent uncertainty, dynamism, complexity, and ambiguity of healthcare law.

Global Strategy Formation Theme: Cost first, quality benefit. The cost first, quality benefit strategy is one in which the initial goal was to reduce cost or waste, but also had a positive impact on quality without that impact being the objectified intent of the strategy. Leaders in healthcare are historically in one of two camps. Camp 1 postulates that healthcare is an altruistic industry that exists to provide clinical care to those in need without regard to the ability to pay. Camp 2 sees healthcare as a business, driven by the sacred duty to provide healthcare to the communities served, and as such must maintain a fiscally solvent model to ensure future access. The cost first, quality benefit theme is found more with the operational and financial leadership of OC1 and CE-PG4 but is also found with the clinical leader in one independent case study, H2. Total representation of these themes within the independent case studies is 50% with a global frequency of 2.4% and subset frequency of 10%. As healthcare moves deeper into the blended model where quality and cost, thus clinical and business, become indistinguishable, clinical leaders may need to move toward the business side, and business leaders may need to understand clinical care on a deeper level. This finding is echoed by H2, as their organization finds that a blended knowledge base yields better, more adaptable outcomes.

The incidence of the clinical leader is increasing in healthcare centers across the United States; yet they often lack the skills, training, or inclination to lead and their ethical principles for the clinical side of heatlhcare may be in direct contradiction to their ability to drive a fiscally sustainable business model (Quin & Perelli, 2016). For the clinical leader, the altruistic ethic taught by clinical institutions where the provider or nurse is the only patient advocate, and the utilitarian view of epidemiological medicine

that is needed to minimize reimbursement risk, may place the clinical leader at philosophical odds (Krupat et al., 2016).

Within Camp 2, the business leader often lacks health outcome literacy as they are in their positions due to a proven record of accomplishment of financial literacy and operational inelegance (Sidorov, 2015). The lack of clinical knowledge may increase the risk profile or the organization under the QPP with the primary center of knowledge coming from a small contingency of employees tasked with getting outcomes reporting consistently correct, and in a way that a non-clinical business leader may understand (Sidorov, 2015). H2 finds that blended leaders can move in a holistic value-added direction, with consideration of all facets of healthcare, thereby making better decisions to lower the risk of penalty under the QPP.

Of the three individual case studies representing the cost first, quality benefit theme, all strategies required blended leaders to be successful. OC1's primary care liaison works directly with the clinical staff in the ED to determine which patients are eligible for follow-up with a primary care doctor—a clinical decision. H2 utilizes both business and clinical staff on the value analysis committee to evaluate product lines to ensure that decisions are made based on the overall impact to the patient and the organization. CE-PG4 utilizes a triad of clinical, operational, and finance leaders to make decisions on provider staffing mix and when deciding if physician hours may safely and effectively transition to mid-level provider hours.

Global Strategy Formation Theme: Quality first, cost benefit. The quality first, cost-benefit strategy is one in which the initial goal was to increase the quality of healthcare delivery and outcomes, but also had a positive impact on total cost without

that impact being the objectified intent of the strategy. Guiding coalitions of mixed clinical and business leaders increase the motivation and energy necessary for individuals to engage in the change process (Maclean & Vannet, 2016; Teixeria et al., 2017). The same two camps and the same internal juxtaposition of altruism and utilitarianism that exists in the cost first, quality befit strategy exist here. In incidents where this is a persistent struggle, leadership techniques such as BSL may become critical. BSL practices may be leveraged by healthcare center leaders to close the gap to the Triple Aim and include buffering, reflecting, connecting, mobilizing, weaving, and transforming (Shirley & White-Williams, 2015). This leadership practice allows for a pre-defined bridge that closes the gap between the business and the clinical leadership.

Of the independent case studies, 83% identified quality first, cost-benefit strategies with CE-PG4 being the outlier. In this case, CE-PG4's participant has no clinical background and is accountancy focused, thus could speak to clinical interaction and outcome concern but did not articulate a specific clinically driven initiative. In all independent case studies in which a clinical leader was the focus, in 100% of the cases, they opened with a clinical strategy and had to stop to think about a cost strategy that they are involved. The opposite is true with the non-clinical leaders as they tend to lead with cost strategies and must think of quality strategies to discuss. This finding may provide insight into the priorities of the clinical versus business leaders and may also demonstrate that, though the silos are breaking down, the traditional way of thinking and the ongoing struggle between altruism and utilitarianism is not yet dead.

Global Strategy Formation Theme: Total employee involvement (TEI).

Wallace, Butts, Johnson, Stevens, and Smith (2016) found a positive indirect effect from

employee involvement climate to innovation via thriving. Though total employee involvement is in only 50% of the individual case studies, it represents 10.7% of the total global frequency and 45% of the subset frequency. This finding suggests that when total employee involvement is an embedded part of successful heatlhcare centers, it becomes a component of the culture and is pervasive in all parts of the formation process, implementation process, and control process regarding strategy. PG1 finds the knowledge of the employee who does the work is invaluable in finding more effective and efficient ways of doing their work. PG3/H1 used total employee involvement to drive the MI strategy not only on the individual hospital level but on the divisional level across fourteen healthcare systems. H2 uses employees on all levels in both the pre- and post-huddle strategy and the value-added strategy; by providing a just culture, and valuing all employees thoughts, all three institutions drive a top-down, bottom-up, and lateral culture.

Global Implementation Theme: Big data. Big data can positively and negatively impact organizations; it is how the data is used and interpreted that defines the difference between the two (Tonidandel, King, & Cortina, 2018). The increasing availability of the electronic health record has led to big data generation; thus, the ability to consolidate, understand and focus on the prevalence of specific diseases within a given population (Feldman et al., 2016). Under the ACA and MACRA, such data is not only required but is made transparent, and available to the public with evidence demonstrating such data stimulates quality improvement activity and mediates patient's selection of their provider (CMS, 2017a; Manning et al., 2017). Patients and their families may use

this reporting transparency to select their healthcare centers and providers. Thus visits and utilization may be impacted negatively and represent an opportunity cost.

Big data utilization occurs in 100% of the individual cases and total transparency of that data in 83% of individual case studies. In all cases, big data assists in the strategy formation process, the iterative process improvement process, allows objectives and drives adherence through cadence data reporting. In all cases, the big data approach is a fundamental core of the organization. Thus acceptance, understanding, and agree on the data itself, the methodology of interpretation, and the data sources are all well established. Reaching this cultural point is an active, adaptive, and ongoing process in all individual case studies.

Global Implementation Theme: Data transparency. There is no shortage of data misreporting scandals in the healthcare industry, both to the public and academically (Godlee, 2016). Any practice that increases transparency, rigor, and accessibility of data shall benefit both the expert and nonexpert communities; however, interpretations, structuring, and standardization of raw data are barriers to this practice (George et al., 2017). Working toward standardization is a component of MACRA, as is the reporting from the healthcare centers and to the public. In actively working toward this goal, the healthcare industry is, by means of financial pressure, moving to eradicate the barriers suggested by George et al. (2017) to eliminate the propensity for misreporting suggested by Godlee (2016). In 83% of the individual case studies, data transparency is a key component of the just culture, strategic formation, implementation, and control, and iterative process improvement components. In OC1, which is not a representative of this global strategy, barriers to representation are weak c-suite leadership and divisive culture.

Global Implementation Theme: Multidepartmental/organizational collaboration. Creation of a financially viable vision for the future of a healthcare center may require a shared purpose with other organizations dedicated to effectively managing population health. Shared purpose is accepting responsibility for the enablement of others to achieve a shared goal in the face of uncertainty (Austin, 2016). In extending leadership beyond the walls of the healthcare center and into the community to reduce cost and increase quality through shared resources and activity systems, leaders need to focus on shared purpose, critical reflection, innovation, and leadership to ensure the highest possible outcome with multidivisional and multiinstitutional partnerships (Sims et al., 2015). Kapp et al. (2016) suggested holistic engagement is critical in managing modifiable factors to reduce chronic care potential, engage the patient in care participation, teach the patient about their conditions and options in a way they understand, and engage the patient in community recourses that support a healthy lifestyle. Thus, success in driving financially viable future healthcare is dependent on the ability of the healthcare center to drive strategy that increases organizational, multi-organization, community, and patient activation toward a shared object—high quality, low cost healthcare.

Multidepartment and multiorganizational collaboration are in 100% of individual case studies; more it has the highest representation in the subset with 31.3% of total representation. All leaders spoke of the criticality of engagement of key stakeholders regardless of their department or organization to drive all their strategies to success. Critical is the ability of leaders to engage with others outside of their department or healthcare center to enlist and sell their vision, to impart the need to unite to achieve the

shared object of high quality, low cost healthcare and to share resources in an often resource-limited environment.

Global Implementation Theme: Task-based implementation. In 100% of individual case studies, a task-based approach to the implementation of the given strategies is evident with this global theme accounting for the second highest subset percentage at 25.2%. This approach is in line with the learning styles of adult learners and is a proven method to increase development, motivation, problem-solving capability, confidence, knowledge share, and habit formation (Chen, 2018; Newsome, Amelia, & Rutter, 2016). In all cases, task assignment is part of the division of labor and begins in the strategy formation stage. In all cases, implementation of strategy involved a delineation of tasks based on the subjects involved in the activity unit and within the activity system. The approach to the assignment is deliberate and based on existing ability, knowledge, and skill sets.

In all cases, the foundational core yet flexible culture allows for ad hoc member involvement to inherit tasks. A specific example of this is in PG3/H1 where the task of obtaining the EKG on AMI patients brought into the ED is assigned to the respiratory therapy department. The nursing staff is also cross-trained on this task to ensure the ability to meet the measure of the door to EKG time if the respiratory therapy department—a limited resource—is not available in the exact moment of need. This cross-training is also an example of multidepartmental collaboration to ensure obtainment of the high quality, low cost object.

Global Control Theme: C-Suite cadence meeting. In 83% of cases, 38.5% of the subset, c-suite level cadence meetings are an integrated part of the control process.

The exception is OC1 which continues to have the barrier of weak high-level leaders with little to no control over the providers, the processes, or the clinic setting. This failure is in line with the observations of Galstian, Herald, O'Connor, and Borkowski (2018) who demonstrated that the characteristics of the CEO have a direct impact on metrics—in this case, the patient experience under the provisions of the ACA. Ou, Waldman, and Petterson (2015) also found that the characteristics of the CEO have a direct impact on organizational performance, collaboration, information share, joint decision making, and shared vision. For those healthcare centers who have successful strategies, the cadence meetings are opportunities for high-level leaders to take a pulse on strategies that are in the process of implementation, or that are in the control phase. This persistent check allows for reassessment and shifts in the strategy to adapt to new variables and pressures under a culture of flexibility.

Global Control Theme: Localized cadence. Representing 61.5% of the subset and 83% of individual case studies, localized cadence is one of the most powerful tools for control. In H2, the pre- and post-meeting acts as a safety mechanism to mitigate preventable error and decrease patient days. This finding is in line with the tenants suggested by Kennedy (2016) to drive a just culture and improve on safety for the patient population served. The same is true in PG3/H1 with post huddles after each AMI in the ED. Each meeting seeks to improve on the existing process and learn from any mistakes that occur; it is an iterative process improvement and just culture. In the above examples, the approach to the localized cadence meeting is one departed from individual blame to hold accountability, to one of learning and prevention—a best practice as identified by Oliver (2018). In all cases, save OC1, localized cadence meetings mirror the expectation

for the c-suite cadence meeting, it is an echo of a top-down supportive approach to overall culture. This connection from C-Suite to total employee involvement may reduce the variation in the implementation and control of the Just Culture concept to prevent the variation found in overall performance metrics by Edwards (2018) as reported by the Agency for Healthcare Research and Quality data on the Hospital Survey on Patient Safety Culture.

Applications to Professional Practice

Research findings within this study are directly applicable to professional business practices within the healthcare industry by providing a mechanism by which leaders may identify strategic opportunity, by providing global cultural standards of successful healthcare centers, and by providing global proven strategies for the strategic formation, implementation and control processes. Further, individual embedded case studies within the Type III case study methodology provide detailed examples of strategies and programs that healthcare center leaders may emulate directly. All participants in this study are in the high quality, low cost quadrant of the QRUR and are part of the 20,480 clinicians (1.8%) and 3,478 practices (1.7%) slated to receive between 6.6% to 19.9% more on their PFS payments for high performance on quality and cost measures in 2016 (CMS, 2018b). The findings within this study benefit healthcare center leaders by providing reproducible strategies within the individual case studies, and a series of proven frameworks healthcare center leaders can use for individualized strategic identification, formation, implementation, and control within their given environment. Engestrom (1987) found that organisms during their lifetimes and in the course of their evolution as a species do not adapt to the environment, but rather construct it to be able to

arrive at a result. The findings of this study all healthcare center leaders to do that, construct the environment through proven strategies to arrive at the shared object that binds all heatlhcare centers, high quality, low cost healthcare.

It is critical for healthcare leaders to understand the majority of healthcare centers culture is not in line with success as defined within the findings of this study. Para and Gerolamo (2017) demonstrated that most organizations in the United States operate under a dominant profile, one of strict hierarchy and highly formal format with inflexible rules and regulations governing employee behavior. These findings demonstrate that even with the burning platform of loss of financial solvency as a result of not meeting the quality and cost standards of the QPP, healthcare center leaders remain recalcitrant to evolving the traditional culture (MACRA, 2015; Teixeria et al., 2017). A critical step in moving toward a just culture—another component of successful healthcare center culture—is committing to differentiation of mistakes from disregard from normal practices and holding all staff accountable (Kennedy, 2016). Accountability under this culture holds all employees accountable, including the executive holding onto the traditional dominant cultural profile to the probable detriment of the healthcare centers financial sustainability. Finally, the interactive process improvement culture—a culture of systematic problem solving continuously (Simon & Houle, 2017)—may not be possible if leaders are holding onto tradition or if employees are not free to report problems or be involved in the solution.

Strategic formation is not a passive process for successful healthcare center leaders; it is an annualized event, and it is proactive. This process plays a critical role in how healthcare center leaders structure their understanding of problems, set goals to

resolve those problems, proactively analyze alternatives, and select the strategy that is the best fit (Wolf & Floyd, 2017). Utilization of the increasing volume of healthcare-related big data and community health assessments, healthcare center leaders, tasked with the stewardship of community health, must consider the operational requirements necessary to implement their selected strategy, to drive predictable results or they will likely fail to thrive in the unpredictable contemporary era (Clark, 2017; Hernandez, 2018). Total employee involvement allows the healthcare center leader to consider the impact of any given strategy on all levels of the organization to avoid costly errors or lost time due to poor selection. Involvement at all leaders leads to a positive effect on both innovation and employee thriving (Wallace et al., 2016); benefits for strategy formation and selection and retention for the healthcare center.

Post-selection, implementation of strategy utilizes big data and data transparency, collaboration, and task-based teaching. With the requirements of the electronic health record, public reporting, payor reporting, and community-based assessments, the availability of big data to healthcare center leader's is growing (CMS, 2017a; Feldman et al., 2016; Manning et al., 2017). The challenge in this environment is the ability to consolidate, understand, and transpose the vast field of data into a usable and actionable format (George et al., 2017). Big data and the transparency of that data allow for a more informed decision and a pathway to total employee involvement. When all stakeholders are actively involved and information, a higher degree of contingent consideration is possible, as is the development of a shared purpose (Kapp et al., 2016). Austin (2016) defined shared purpose as accepting responsibility for the enablement of others to contribute, and problem solve in the face of uncertainty. This definition interlocks the

found strategies of total community involvement, and data transparency and opens the door to multidepartmental and multiorganizational collaboration. Success in driving successful strategies designed to increase quality, decrease cost, or both to minimize the risk profile to financial non-solvency is contingent upon the healthcare center leader's ability to set an organizational culture, formulate a strategy tapping into the available human resource, educate adult learners through proven task-based methods, and potentially unite both internal departments and external organizations towards a common object.

Control of implemented strategy rests primarily on the shoulders of the healthcare center leaders in that they are responsible for holding accountability. The top executive directly impacts the organization's performance, the amount of internal and external collaboration, information share, joint decision making, as well as the shared vision (Ou et al., 2015). These are the components of success within the findings of this study. Holding accountability to the objects derived in the strategy formation process ensures the long-term sustainability of the strategy and ensures adoption into the standards of operation (McChesney, Covey, & Huling, 2012)—the core foundation.

Implications for Social Change

Contribution to Business Practice

CMS assigns reimbursement penalties or incentives trending up from ±4% in 2019 to ±9 in 2022 based on total scores as a series of weighted composite scores (CMS, 2017a; MACRA, 2015). CMS reimbursement represents a significant proportion of healthcare center reimbursement in the United States (Rutherford, 2017). Thus, strategies are needed to mitigate the risk of financial failure due to quality miss. The findings of

this study identify key strategies, but more importantly, the underlying global themes of the strategy formation, implementation, and control phases to allow direct replication of the identified strategies *and* a toolbox by which healthcare center leaders may devise, implement, and control strategies specific to their needs. This toolbox utilizes CHAT-III as an analysis tool by which healthcare center leaders may break down and understand their specific activity system to identify areas of strategic need. Tangible improvements to the organization include a series of standards for organizational culture, a toolbox for strategy formation, implementation, and control of both cost first—quality benefit and quality first—cost-benefit strategies, and methods to control the implemented change to ensure sustainability.

Standard Organizational Culture. Primary cultural themes include a foundational core, yet flexible environment, a just culture, and an iterative process improvement culture. Implementation of process improvement may only be successful when aligned with organizational culture (Paro & Gerolamo, 2017). Supporting the need for a foundational core, yet flexibility is the finding by Para and Gerolamo (2017) that most organizations have a dominant profile of the hierarchy culture characterized by a highly structured formal format with rules and procedures governing the behavior of people. As only 20,480 clinicians (1.8%) and 3,478 practices (1.7%) are slated to receive between 6.6% to 19.9% more on their PFS payments related to high performance on quality and cost measures in 2016 (CMS, 2018b), understanding the detriment to this historical, cultural foundation may be critical for healthcare centers to change. Identification of the key cultural themes of successful healthcare leaders within this study

provides those leaders with opportunity cost or penalties assessments to emulate the successful cultural components.

Toolbox for Strategy Formation, Implementation, and Control. Key global themes of the strategy formation process include an annualized strategy process with inter-year cadence meetings, total employee involvement and a fundamental understanding of cost first—quality benefit and quality first—cost-benefit strategies. Identification of strategic opportunity is critical to the pre-strategy formation process. CHAT provides a framework by which leaders may evaluate practice-based theory to evaluate previous, current, and anticipated practices, strategies, and the multilevel sociocultural, political-economic, and institutional context of the practice (Foot, 2014). The use of CHAT-III allows translation of practice-based theory into interconnected activity systems to work towards a common goal through a set of coordinated activities to close the implementation gap. The findings of this study provide leaders outside of the high quality, low cost quadrant of the QRUR with proven strategies that may be applicable to their practices to identify opportunities to improve on the identification, strategic formation, implementation, and control phases—thereby moving to strategies proven to lower the risk provide of the healthcare center and increase the quality and cost of care delivery. By improving the organization's strategic matrix through proven strategies to lower the risk profile, both financial solvency and access are at less risk.

Control for sustainability. Key global themes for control are c-suite cadence meetings and localized cadence. Identification, formation and implementation stages are useless without control of the new process or strategy. The characteristics of the CEO have a direct impact on organizational performance, collaboration, information share,

joint decision making, and a shared vision (Ou et al., 2015). Cadence meetings are opportunities for high-level leaders to take a pulse on strategies that are in the process of implementation, or that are in the control phase. This strategy allows for flexibility and the ability to evolve quickly to external and internal environmental pressures. Pushing down the expectation of cadence meetings via total employee involvement taps the iterative process improvement and just culture components of successful healthcare centers. High levels of control over emulated strategies identified in this study may assist in further reducing the risk profile of healthcare centers outside of the high quality, low cost quadrant.

Implications for Social Change

Healthcare leaders face a unique social enterprise challenge as healthcare institutions exist to promote healthcare as a social purpose (Luke & Chu, 2013). Loss of financial solvency increasingly puts healthcare access at risk and yields higher mortality rates in communities (Watters et al., 2015). This risk is especially real in critical access and rural facilities across the United States that treat the poor and near-poor populations (CDC, 2015). Such facilities are especially vulnerable to financial failure under the QPP due to resource availability, thus also being assailable to increased community mortality rates (Watters et al., 2015). The findings of this study provide proven strategies—that include strategies successfully launched in rural facilities—that may be replicated to mitigate the risk of financial failure, the loss of healthcare access, and consequently the risk for increased mortality to the community served. More, the toolbox demonstrated through the global thematic analysis for the strategy formation, implementation and control provides leaders with a system by which they may devise strategies given their

unique set of circumstances and resources. Tangible improvements to the community include the increased likelihood of continued ready access to healthcare, improved population health, and lower mortality rates.

Access to healthcare. Larson, Cull, Racine, and Olson (2016) found that among children in the United States, uninsured rates declined from 12.1% in 2000 to 5.3% in 2014, with improvement in all five national access indicators. For those enrolled in Medicaid and CHIP—a provision of MACRA—this was especially true (Ku, Sharac, Bruen, Thomas, & Norris, 2013). In the adult population, the same pattern of increased access and quality are true (Obama, 2016). Such findings demonstrate that MACRA and the ACA are driving access and better outcomes.

Improved population health and lowered mortality rates. Access to healthcare and active engagement with the population to drive patient activation yield lower mortality rates (Hibbard et al., 2017; Watters et al., 2015). Population health includes outcomes, disparities, determinants, and risk factors within a community (Boudreaux & Vetter, 2016; Hibbard et al., 2017). Managing a populations health then is interconnected with organizational interventions (culture/environment), provider interventions, and family and community resources (Boudreaux & Vetter, 2016). Kapp et al. (2016) suggested holistic engagement is critical in managing modifiable factors to reduce chronic care potential, engage the patient in care participation, teach the patient about their conditions and options in a way they understand, and engage the patient in community recourses that support a healthy lifestyle. This finding is in line with the preventative maintenance and screening quality components of the MIPS measures, and affordability in line the cost reduction component of the QPP.

As legislation and regulation tie quality outcomes of populations to cost and then to reimbursement, it becomes critical to the business of healthcare to comply with clinical standards to ensure fiscal viability. The community aspect of CHAT-III assists healthcare leaders in identifying how the micro- and macro community impacts each activity unit, thus tying the analysis portion of the toolbox identified in the findings of this study to population health via an understanding of community engagement. Reaching beyond the walls and involving other organizations within the leaders' strategy is also identified as a global theme. Combining these techniques with others that are common in ACOs, i.e., hot-spotting, disease frequency resource planning, or selective referrals (Feldman et al., 2016; Nathan & Dimick, 2016), provides a holistic picture and action plan options for strategy formation and management of population health and lowering of patient mortality within the community served.

Recommendations for Action

Healthcare center leaders are vastly unsuccessful in identifying strategic opportunities or formulating, implementing, and controlling strategies that mitigate opportunity cost or penalty assessment under MACRA's QPP, as indicated by the 98.8% bonus attainment failure rate (CMS, 2018b). Penalty assessment increases from ±4% in 2019 to ±9 in 2022 based on total scores under the four metrics as a series of weighted composite scores (CMS, 2017a; MACRA, 2015). CMS reimbursement represents a substantial portion of mean healthcare center reimbursement (Rutherford, 2017). Thus healthcare center leaders face increasing financial pressure to produce, implement, and control strategies that mitigate the risk profile for a penalty. Exacerbating this pressure is that loss of financial sustainability resulting in loss of access to healthcare for the

community served which is proven to drive higher mortality rates (Watters et al., 2015). Though all industries may benefit from the fundamental global underpinnings of this study as strategy identification, implementation, and control are required for successful financial sustainability for all organizations, the primary target is healthcare industry leaders as the overarching research question focuses on strategies for risk reduction under MACRA's QPP. Recommendations for action for healthcare center leaders include an assessment of the current state using the CHAT-III framework, replication of strategies identified within the individual case studies as appropriate, and utilization of the global identified themes as a toolbox for future strategic intervention for identified individual needs.

Leaders in the healthcare industry can use the CHAT-III framework to assess their current state for cultural identity, strategic opportunities, internal and external contradictions, and to outline future strategies within an individual activity unit or activity system (Engström, 2001, 2011; Eppich & Cheng; 2015; Ho, Chen & Ng; 2016; White et al., 2016). Traditional healthcare models find foundations in economic or utilitarian frameworks; however, such models are generally superficial, only looking at outcomes retrospectively and generalizing phenomenon that drives lag metrics (Marietto et al., 2012). The findings of this study suggest that healthcare strategy requires a richer understanding of the strategy process as a proactive approach that considers practices, praxis, and practitioners. The CHAT-III framework allows leaders to leverage a multi-dimensional approach to the complex interactions within an activity unit or system (Foot, 2014). CHAT-III as an applied framework allows components of complex activity systems to become visible for critical examination (Eppich & Cheng, 2015; Thompson,

2015). In all individual case studies, leaders remain open to this critical examination and the flexible, just, and interactive process improvement culture assist in driving needed change. For healthcare center leaders that fail to meet the high quality, low cost standards, performing this critical examination and being open to the findings is a highly recommended first step.

A second recommendation is a direct replication of the strategies within this study. In all cases, the strategies are outlined within the CHAT-III framework to allow the key components across all activity units within the activity system to cross-link (Engström, 2011). Though superficially this would appear to be the easiest course, it is critical to remember that each system is a complex series of activities, and alteration of key components within the activity system may be necessary to allow the replication to be successful in a new environment (Engström, 2001; Eppich & Cheng, 2015). A third recommendation is for healthcare center leaders to utilize the global identified themes as a toolbox for future strategic intervention for identified individual needs. This recommendation requires the healthcare center leader to identify opportunities for strategic intervention, then walk through each of the identified global themes to establish all cultural and operational components are in place to ensure the ability to replicate the identified processes. A multi-faceted poly-variable approach is sine qua non to the success of understanding the individual environmental pressures on patient outcome and care team interactions (Hartwell et al., 2016). Using the toolbox of CHAT-III as an examination lens and the global themes as a formation, implementation, and control lens meets the requirements of this approach, allowing the leader to structure their understanding of their specific problems, set goals to resolve those problems, proactively

analyze alternative solutions, and select a strategy with the highest likelihood of success (Wolf & Floyd, 2017).

Dissemination of the findings of this study shall occur in several ways. Each participant of this study shall receive a copy of the completed study allowing them to share their newly gained insight with peers. I will offer to present the findings of this study to strategy formation counsels and committees that I am a part of to drive replication and future actions that may lower future risk profiles, thereby lowering the risk to access and community mortality. Future scholars and researchers will have the opportunity to read, use, and build upon the findings of this study via the ProQuest dissertation database. Finally, I will use the findings of this study in future leadership training and interactions and seek opportunities to publish future findings within the healthcare industry to continue to contribute to the academic literature body.

Recommendations for Further Research

A recommendation for future research is a qualitative multiple case study exploring strategies derived for private insurance payors using the HEDIS developed and managed by the National Committee for Quality Assurance (NCQA). HEDIS measures are a set of quality measures that are similar to MIPS measures; however, there is some overlap and some that are in contradiction (CMS, 2017b; NCQA, 2018). For example, both CMS and a private payer may require a HgA1c within an annual year on all diabetic patients, but CMS requires the quality measure to be met at less than 9%, whereas the private payment may require less than 7%. Multiple variables and different requirements for the same diagnosis may represent an added layer of complexity to the formative and implementation stages of a given strategy. Providers and staff may need to understand

this variance on a per case basis, or why the measure may be set as a policy at the lowest/highest threshold out of the payer mix—a level that may be different from what they are accustomed.

Another recommendation for future research is a qualitative time-lapse multiple case study to explore the evolution of a strategy over several years. Vermeulen (2018) found that the contemporary healthcare environment is one of legislative uncertainty; tracking the changes in strategies throughout several years to explore how successful healthcare center leaders adapted to the changing environment may provide a deeper understanding of how other leaders may need to alter their thinking. Such a study may provide insight into a higher level of sustainability for healthcare center leaders and demonstrate the need to evolve and change which would further support the findings within this study of the need for a culture rooted in a foundational culture with the ability to evolve and change as needed.

A final recommendation for future research is a qualitative multiple case study exploring the mid- and low-level leadership components of the implementation process. The designed focus of this study is on the high-level leader as they are involved in strategy formation and implementation. A study that focused solely on how mid- and low-level leaders made the strategy successful at the leader-employee interaction may provide insight on how the identified task-based implementation tactic yields success. Such a study may also provide insight into internal and external contradictions not explored in this study.

Reflections

Personal Bias

I believed that healthcare entities and their leaders had a strong sense of community and communication—that sharing best practice is a common occurrence and publications provided a means by which to communicate solutions across competing systems. I believed that the approach to strategy formation and the process of implementation was *always* a complex proactive system of intertwined data and forecast modeling. I found, through this process, that the greatest flaw in communication is the illusion that it has happened at all. Though we as a healthcare community share best practices, we seem to rarely take the time to understand them to the level of detail that is required to replicate them successfully—and then, when our implementation fails—we wonder why. Through this process, I have come to understand that healthcare strategy formation is often a complex system of intertwined data and forecasting, but not always, and external factors that the organization has little control over are often the primary driver for a new strategy. As financial pressure increases for healthcare centers, the leadership must be flexible enough to shift each year as MIPS—and HEDIS—measures change with best practices. Though evolution is not new to healthcare, the pace at which such change is occurring is, as is the big data that holds accountability (Teixeria et al., 2017). I had a perception that annual changes in implementation were indecisiveness on the part of high-level leaders; now I understand that this is a reactive process for the majority, one that is not a theme of successful healthcare centers who take a proactive approach—the minority.

Changes in Thinking

My undergraduate degree is in biology; this degree taught me to think like a scientist, to look at the world through an empirical lens and to always question. My master's degree is in business administration, which built on my empirical lens by then looking to see how I can effectively alter the environment around me to drive higher quality and financial sustainability in the healthcare industry. The doctoral degree built upon my ability to alter the environment around me by asking how I can alter that environment to drive quality and financial sustainability in a way that drives positive social change. Healthcare exists to serve the community, to better the quality of life, and to give hope to those in need. Epidemiological studies and community health assessments offer insight into the community's healthcare disparities—the empirical lens. MIPS and HEDIS measures define best practice and hold accountability through financial means—the business lens. Information and accountability mean nothing if leaders are unfocused on driving positive change in the community—that is the heart of healthcare. The doctoral degree, for me, is the bridge between empirical data, the business of healthcare, and the people within the community. It has reminded me of healthcare's purpose and given me the skills that I need to be a logical, business-oriented leader, driven to produce positive social change for the communities I serve.

Conclusion

Vermeulen (2018) made clear that the contemporary healthcare industry is one of legislative uncertainty that has a lack of clear direction and that under these conditions strong, deliberate, and disciplined strategic planning is critical to the success of leaders charged with the stewardship of healthcare delivery. Changes in demographics, payer

mix, constraints in funding, and increasing demand present challenges in effectively managing sustainable healthcare systems (Arisha & Rashawn, 2016; Kessels et al., 2015). As CMS reimbursement represents a sizable portion of healthcare centers reimbursement, the annually increasing risk profile for these centers exacerbates these challenges (CMS, 2017d; MACRA, 2015; Rutherford, 2017). In the United States, only 20,480 clinicians (1.8%) and 3,478 practices (1.7%) are slated to receive between 6.6% to 19.9% more on their PFS payments related to high performance on quality and cost measures in 2016 (CMS, 2018b).

The goal for this qualitative multiple case study was to explore strategies that successful healthcare center leaders use to mitigate the risk of reimbursement penalties under MACRA's QPP. CHAT-III is a proven analysis tool that is useful in identifying areas of strategic opportunity and the activities needed for successful implementation. The underlying culture of successful centers is a foundational rooted core with the flexibility for change and just culture. Those that are successful also have an iterative process improvement culture and an annualized process for strategy formation with cadence meetings throughout the year to ensure a successful launch and to alter course as necessary. Strategies are primarily quality driven with a cost-benefit and involve employees at all levels to understand barriers wholistically. Big data and transparency of that data, as well as multidepartmental and organizational collaboration, are critical to the formative, launch, and control phases of strategy. Delineated task-based implementation is best practice with high-level and localized cadence meetings holding accountability in the control phase. Tangible improvements to the organization include a series of standards for organizational culture, a toolbox including CHAT-III as a tool for the

identification of strategic opportunity and a proven methodology for strategy formation, implementation, and methods to control the implemented change to ensure financial sustainability. Tangible improvements to the community include the increased likelihood of continued ready access to healthcare, improved population health, and lower mortality rates.

Healthcare center leaders may no longer be hollow, walking alone, avoiding speech, and sightless. Impenetrable silos of opposition between the clinical and the business leader have no place in the current and future healthcare landscape. The business of healthcare is quality clinical care; quality clinical care cannot exist without the business of healthcare. The ACA and MACRA tie reimbursement to quality and cost and has blurred the lines between the two traditionally opposing camps. Failure to unite and drive strong, deliberate, and disciplined strategic planning may increase the risk of financial failure putting healthcare access at risk and driving higher mortality rates (Watters et al., 2015). The new landscape of healthcare is one of great challenge; successful healthcare strategy is not unattainable, but it does mean that those charged with the stewardship of healthcare delivery must rise to ensure financial sustainability, to drive positive change, and to safeguard the lives of those in the communities they serve.

References

Patient Protection and Affordable Care Act, 42 U.S.C. § 18001 et seq. (2010)

Alsharif, A. M., Potts, M., Laws, R., Freire, A. X., & Sultan-Ali, I. (2016). Unattended sleep studies in a VA population: Initial evaluation by chart review versus clinic visit by a midlevel provider. *Southern Medical Journal, 109,* 677-681. doi:10.14423/SMJ.0000000000000543

American Association of Nurse Practitioners (2017). *Nurse practitioner fact sheet*. Retrieved from https://www.aanp.org.

Anderson, J. L. & Morrow, D.A. (2017). Acute myocardial infarction. *Nursing and Allied Health Database, 376,* 2053-2064. doi:10.1056/NEJMra1606915

Ansell, D., Crispo, J. A. G., Simard, B., & Bjerre, L. M. (2017). Interventions to reduce wait times for primary care appointments: A systematic review. *BMC Health Services Research,* 17(1), 1-9. doi:10.1186/s12913-017-2219-y

Arisha, A., & Rashwan, W. (2016). *Modeling of healthcare systems: Past, current, and future trends. Proceedings of the 2016 Winter Simulation Conference*, Washington, D.C. doi:10.1109/WSC.2016.7822203

Austin, J. (2016). 2020 vision: Genetic counselors as acknowledged leaders in integrating genetics and genomics into healthcare. *Journal of Genetic Counseling, 25*(1), 1-5. doi:10.1007/s10897-015-9913-x

Babones, S. (2015). Interpretive quantitative methods for the social sciences. *Sociology, 50,* 1-17. doi:10.1177/0038038515583637

Badcock, P. B., Davey, C. G., Whittle, S., Allen, N. B., & Friston, K. J. (2017). The depressed brain: An evolutionary systems theory. *Trends in Cognitive Sciences, 21*, 182-194. doi:10.1016/j.tics.2017.01.005

Balbale, S. N., Locatelli, S. M., & LaVela, S. L. (2016). Through their eyes: Lessons learned using participatory methods in healthcare quality improvement projects. *Qualitative Health Research, 26*, 1382-1392. doi:10.1177/1049732315618386

Bartol, T. (2016). Recreating healthcare: The next generation. *The Nurse Practitioner, 41*(11), 10-11. doi:10.1097/01.NPR.0000502794.88855.cd

Bauman, A. (2015). Qualitative online interviews: Strategies, design, and skills. *Qualitative Research in Organizations and Management: An International Journal, 10*, 201-202. doi:10.1108/QROM-10-2014-1252

Bennett, E. E., & McWhorter, R. R. (2016). Opening the black box and searching for smoking guns: Process causality in qualitative research. *European Journal of Training and Development, 40*, 691-718. doi:10.1108/ejtd-07-2015-0049

Berkowitz, S. A., Hulbert, A. C., Hong, C., Stonwell, B. J., Tirozzi, K. J., Traore, C. Y., & Atlas, S. J. (2016). Addressing basic resource needs to improve primary care quality: A community collaboration programme. *BMJ Quality and Safety, 25*, 164-172. doi:10.1136/bmjqs-2015-004521

Bertalanffy, L. V. (1949). Zu einer allgemeinen systemlehre. *Blätter für Deutsche Philosophie, 19*, 139-164.

Bhaskar, S. B., & Manjulsdevl, M. (2016). Methodology for research II. *Indian Journal of Anesthesia, 60*, 646-651. doi:10.4103/0019-5049.190620

Birt, L., Scott, S., Cavers, D., Campbell, C., & Walter, F. (2016). Member checking: A tool to enhance trustworthiness or merely a nod to validation? *Qualitative Health Researcher, 26,* 1802-1811. doi:10.1177/1049732316654870

Blackstone, A. (2012). *Principles of sociological inquiry: Qualitative and quantitative methods*. Boston, MA: FlatWorld.

Boeing, G. (2016). Visual analysis of nonlinear dynamical systems: Chaos, fractals, self-similarity and the limits of prediction. *Systems*, *4*(4), 1-18. doi:10.3390/systems4040037

Bond, G. R., Drake, R. E., McHugo, G. J., Peterson, A. E., Jones, A. M., & Williams, J. (2014). Long-term sustainability of evidence-based practices in community mental health agencies. *Administration and Policy in Mental Health and Mental Health Services Research*, *41*, 228-236. doi:10.1007/s10488-012-0461-5

Boston University. (2017). *Qualitative data analysis software comparison*. Retrieved from www.bu.edu.

Boudreaux, A. M., & Vettr, T. R. (2016). A primer on population health management and its perioperative application. *International Anesthesia Research Society*, *123*(1), 63-70. doi:10.1213/ane.0000000000001357

Bozic, K. J. (2015). The role of the payment system in improving value in healthcare. *The Journal of Arthroplasty, 30,* 341-342. doi:10.1016/j.arth.2015.01.034

Brislen, H., Dunn, A., Parada, A., & Rendon, P. (2016). Addressing the primary care shortage on a shoestring: A successful track in an internal medicine residency. *Academic Medicine, 91,* 224-228. doi:10.1097/ACM.0000000000000916

Brit, L., Scott, S., Cavers, D., Campbell, C., & Walter, F. (2016). Member checking: A tool to enhance trustworthiness or merely a nod to validation? *Qualitative Health Research, 26,* 1802-1811. doi:10.1177/1049732316654870

Castillo-Montoya, M. (2016). Preparing for interview research: The interview protocol refinement framework. *The Qualitative Report, 21,* 811-831. Retrieved from tqr.nova.edu.

Casey, D., & Murphy, K. (2009). Issues in using methodological triangulation in research. *Nurse Researcher, 16*(4), 40-55. doi:10.7748/nr2009.07.16.4.40.c7160

Carayannis, E. G., Campbell, D. F. J., & Rehman, S. S. (2016). Mode 3 knowledge production: Systems and systems theory, clusters and networks. *Journal of Innovation and Entrepreneurship, 5*(17), 1-24. doi:10.1186/s13731-016-0045-9

Caron, R. M., & Hooker, E. A. (2015). Teaching population health: Considerations for educating the future healthcare administration workforce. *The Journal of Health Administration Education, 32,* 381-389. Retrieved from www.aupha.org.

Carter, N., Bryant-Lukosius, D., DiCenso, A., Blythe, J., & Neville, A. (2014). The use of triangulation in qualitative research. *Oncology Nursing Forum, 41,* 545-547. doi:10.188/14.ONF.545-547

Caws, P. (2015). General systems theory: Its past and potential. *Systems Research and Behavioral Science, 32,* 514-521. doi:10.1002/sres.2353

Centers for Disease Control and Prevention. (2014). *National ambulatory medical care survey: 2014 state and national summary tables*. Retrieved from www.cdc.gov.

Centers for Disease Control and Prevention. (2015). Healthcare access and utilization among adults aged 18-64, by race and Hispanic origin: United States, 2013 to 2014. *National Center for Health Statistics Data Brief*, No. 208, 1-8.

Centers for Medicare and Medicaid Services. (2015). *2014 Measure information about the Medicare spending per beneficiary, calculated for the value-based payment modifier program*. Retrieved from www.cms.gov.

Centers for Medicare and Medicaid Services. (2016). *2016 QRUR and 2018 Value Modifier*. Retrieved from www.cms.gov.

Centers for Medicare and Medicaid Services. (2017a). *Detailed methodology 2015 QRURs and the 2017 value modifier*. Retrieved from www.cms.gov.

Centers for Medicare and Medicaid Services. (2017b). *The Medicare Access and CHIP Reauthorization Act of 2015: The merit-based incentive payment system, MIPS scoring methodology overview.* Retrieved from www.cms.gov.

Centers for Medicare and Medicaid Services. (2017c). *National health expenditure data: Historical*. Retrieved from www.cms.gov.

Centers for Medicare and Medicaid Services. (2017d). *National Health Expenditure data: NHE fact sheet*. Retrieved from www.cms.gov.

Centers for Medicare and Medicaid Services. (2018a). *2016 PQRS and 2018 value modifier experience reports*. Retrieved from https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeedbackProgram/Downloads/2018-VM-Experience-Rpt.pdf

Centers for Medicare and Medicaid Services. (2018b). *2018 value modifier results. Practices receive upward or neutral adjustments to their Medicare payments in*

2018 based on performance on quality and cost measures. Retrieved from https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeedbackProgram/Downloads/2018-Value-Based-Payment-Modifier-Factsheet.pdf

Centers for Medicare and Medicaid Services. (2018c). *Medicare provider utilization and payment data: Physician and other supplier PUF CY2015*. Retrieved from https://data.cms.gov/Medicare-Physician-Supplier/Medicare-Provider-Utilization-and-Payment-Data-Phy/sk9b-znav

Chan, Z. C., Fung, Y-L., & Chien, W-T. (2013). Bracketing in phenomenology: Only undertaken in the data collection and analysis process. *Qualitative Report, 18*(30), 1-9. Retrieved from tqr.nova.edu.

Chen, C., Chu, H., Torbati, S., Lange, D., & Henry, T. (2017). TCT-637: Accuracy of pre-hospital EKG for cath lab activation. *Journal of the American College of Cardiology, 70*, B281-B282. doi:10.1016/j.jacc.2017.09.886

Chen, I.C. (2018). Incorporating task-based learning in an extensive reading program. *English Language Teaching Journal, 72*, 405-414. doi:10.1093/elt/ccy008

Cipriano, P. F. (2017). Population health management: A formula for value. *Nursing Management, 48*(2), 22-24. doi:10.1097/01.NUMA.0000511918.82892.99

Clarke, S. F. (2017). Strategic operational planning: Why healthcare organizations need to adopt this dual approach under population health management. *The Journal of Medical Practice Management, 33*(1), 15-18. Retrieved from www.greenbranch.com

Clarke, T. C., Norris, T., & Schiller, J. (2017). *Early release of selected estimates based on data from the 2016 national health interview survey*. Retrieved from www.cdc.gov.

Clough, P. (2002). *Narratives and fictions in educational research*. Buckingham, England: Open University Press.

Cochran, M. F., & Berkowitz, A. L. (2015). A global health delivery framework approach to epilepsy care in resource-limited settings. *Journal of the Neurological Sciences, 358*, 263-265. doi:10.1016/j.jns.2015.09.007

Colangelo, A. J. (2016). A systems theory of fragmentation and harmonization. *New York University Journal of International Law and Politics, 49*(1), 1-61.

Colombo-Dougovito, A. M. (2017). The role of dynamic systems theory in motor development research: How does theory inform practice and what are the potential implications for autism spectrum disorder? *International Journal on Disability and Human Development, 16*, 141-155. doi:10.1515/ijdhd-2016-0015

Committee on Quality Healthcare in America, Institute of Medicine. (2001). *Crossing the Quality chasm: a new health system for the 21st century*. Washington, D.C.: National Academy Press.

Conlin, P. R., Asefzadeh, B., Pasquale, L. R., Selvin, G., Lampkin, R., & Cavallerano, A. A. (2015). Accuracy of a technology-assisted eye exam in evaluation of referable diabetic retinopathy and concomitant ocular diseases. *British Journal of Opthalmology, 99*, 1622-1627. doi:10.1136/bjophthalmol-2014-306536

COSMOS Corporation. (1998). *Evaluation of MEP-SBDC partnerships: Final report*. Report prepared for the National Institute of Standards and Technology, United States Department of Commerce, Gaithersburg, MD.

Cottam, R., Ranson, W., & Vounckx, R. (2015). Chaos and chaos; complexity and hierarchy. *Systems Research and Behavioral Science, 32,* 579-592. doi:10.1002/sres.2288

Creig, G., Entwistle, V. A., & Beech, N. (2012). Addressing complex healthcare problems in diverse settings: Insights from activity theory. *Social Science and Medicine, 74,* 305-312. doi:10.1016/j.socscimed.2011.02.006

Creswell, J. W. (2013). *Qualitative inquiry and research design choosing among five approaches* (3erd ed.). Thousand Oaks, CA: SAGE Publications

Criscitelli, T. (2015). Fostering a culture of safety: The OR huddle. *AORN Journal, 102*, 656-659. doi:10.1016/j.aorn.2015.10.002

Dai, T. (2015). Incentives in United States healthcare operations. *Decision Sciences, 46,* 455-463. doi:10.1111/deci.12136

Dall, T., Chakrabarti, R., Iacobucci, W., Hansari, A., & West, T. (2017). *The complexities of physician supply and demand: Projections from 2015 to 2030*. Retrieved from https://aamc-black.global.ssl.fastly.net.

Dall, T. M., Gallo, P. D., Chakrabarti, R., West, T., Semilla, A P., & Storm, M. V. (2013). An aging population and growing disease burden will require a large and specialized healthcare workforce by 2025. *Health Affairs, 32,* 2013-2020. doi:10.1377/hlthaff.2013.0714

Department of Health and Human Services. (2017). *Medicare program; CY 2018 updates to the Quality Payment Program; and Quality Payment Program: Extreme and uncontrollable circumstance policy for the transition year*. Retrieved from www.federalregister.gov.

Department of Health, Education, and Welfare. (1979). *The Belmont report: Office of the Secretary ethical principles and guidelines for the protection of human subjects of research. The national commission for the protection of human subjects of biomedical and behavioral research*. Retrieved from www.hhs.gov.

Desai, A. V., Hawaldar, R. W., & Divatia, J. V. (2017). Role of accreditation in quality improvement of institutional review board. *Perspectives in Clinical Research, 8,* 145-147. doi:10.4103/2229-3485.210445

Descombe, M. (2007). *The good research guide: For small-scale social research* (3rd ed.). Buckingham, England: Open University Press.

Dinov, I. D. (2016). Methodological challenges and analytic opportunities for modeling and interpreting big healthcare data. *GigaScience, 5*(1), 12-27. doi:10.1186/s13742-016-0117-6

Dodgson, J. E. (2017). About research: Qualitative methodologies. *Journal of Human Lactation, 33,* 355-358. doi:10.1177/0890334417698693

Dorner, D. G., Gorman, G. E., & Calvert, P. J. (2015). *Information needs analysis principles and practice in information organizations*. London, England: Facet Publishing.

Drew, H. (2014). Overcoming barriers: Qualitative interviews with German elites. *Electronic Journal of Business Research Methods, 12*(2), 77-86. Retrieved from http://www.ejbrm.com/main.html

Dzau. V. J. (2015). The national academy of medicine's vision: Leadership, innovation, and impact for a healthier future. *Journal of the American Medical Association, 314*, 2127-2128. doi:10.1001/jama.2015.15820

Edwards, M.T. (2018). An assessment of the impact of just culture on quality and safety in US hospitals. *American Journal of Medical Quality, 33*, 502-508. doi:10.1177/1062860618768057

Engeström, Y. (1987). *Learning by expanding: An activity-theoretical approach to developmental research*. Helsinki, Finland: Orienta-Konsultit.

Engeström, Y. (1999). Communication, discourse and activity. *Communication Review, 3*, 165-186. doi:10.1080/10714429909368577

Engeström, Y. (2001). Expansive learning at work: Toward an activity theoretical reconceptualization. *Journal of Education and Work, 14*(1), 133-156. doi:10.1080/13693080020028747

Engeström, Y. (2005). *Developmental work research: Expanding activity theory in practice*. Berlin, Germany: Lehmanns Media.

Engeström, Y. (2008). *From teams to knots: Activity-theoretical studies of collaboration and learning at work*. Cambridge, UK: Cambridge University Press.

Engeström, Y. (2011). From design experiments to formative interventions. *Theory and Psychology, 21*, 598-628. doi:10.1177/0959354311419252

Eppich, W., & Cheng, A. (2015). How cultural-historical activity theory can inform interprofessional team debriefings. *Clinical Simulation in Nursing, 11*, 383-389. doi:10.1016/j.ecns.2015.05.012

Feldman, K., Stiglic, G., Dasqupta, D., Kricheff, M., Obradovic, Z., & Chawla, N. V. (2016). Insights into population health management through disease diagnoses networks. *Scientific Reports, 6*, 30465-30476. doi:10.1038/srep30465

Feibert, D. C., & Jacobsen, P. (2015). Measuring process performance within healthcare logistics—a decision tool for selecting track and trace technologies. *Academy of Strategic Management Journal, 14*, 33-57. Retrieved from www.abacademies.org.

Finlay, L. (2002). "Outing" the researcher: The provenance, process, and practice of reflexivity. *Qualitative Health Research, 12*, 531-545. doi:10.1177-104973202129120052

French, M. T., Homer, J., Gumus, G., & Hickling, L. (2016). Key provisions of the Patient Protection and Affordable Care Act (ACA): A systematic review and presentation of early research findings. *Health Services Research, 51*, 1735-1771. doi:10.1111/1475-6773.12511

Foot, K. A. (2014). Cultural-historical activity theory: Exploring a theory to inform practice and research. *Journal of Human Behavior in the Social Environment, 24*, 329-347. doi:10.1080/10911359.2013.831011

Fukuda, H., & Mizobe, M. (2017). Impact of nonadherence on complication risks and healthcare costs in patients newly-diagnosed with diabetes. *Diabetes Research and Clinical Practice, 123*(1), 55-62. doi:10.1016/j.diabres.2016.11.007

Fush, P. I., & Ness, L. R. (2015). Are we there yet? Data saturation in qualitative research. *Qualitative Report, 20*, 1408-1416. Retrieved from www.nova.edu.

Galstian, C., Herald, L., O'Connor, S., & Borkowski, N. (2018). The relationship of hospital CEO characteristics to patient experience scores. *Journal of Healthcare Management, 63*(1), 50-61. doi:10.1097/JHM-D-16-00020

George, A. J. T. (2016). Research ethics. *Medicine, 44*, 615-618. doi:10.1016/j.mpmed.2016.07.007

George, C.H., Stanford, S.C., Alexander, S., Cirino, G., Docherty, J. R., Giembycz, M.A., Hoyer, D., ….Ahluwalia, A. (2017). Updating the guidelines for data transparency in the British Journal of Pharmacology - data sharing and the use of scatter plots instead of bar charts. *British Journal of Pharmacology, 174*, 2801-2804. doi:10.1111/bph.13925

George, G., Haas, M., & Pentland, A. (2014). Big data and management. *Academy of Management Journal, 57*, 321-326. doi:10.5465/amj.2014.4002

Glazer, G., & Sharp-McHenry, L. (2017). Legislative: Advancing healthcare transformation: A new era for academic nursing. *Journal of Issues in Nursing, 22*(2), 1-3. doi:10.3912/OJIN.Vol22No02LegCol01

Godlee, F. (2016). Data transparency is the only way. *British Medical Journal, 352*, i1261. doi:10.1136/bmj.i1261

Gomm, R. (2004). *Social research methodology, a critical introduction*. Hampshire, England: Palgrave McMillian.

Gooch, A., & Vavreck, L. (2016). How face-to-face interviews and cognitive skill affect item non-response: A randomized experiment assigning mode of interview. *Political Science Research and Methods, 1*, 1-20. doi:10.1017/psrm.2016.20

Gorman, G. E., & Clayton, P. R. (2005). *Qualitative research for the information professional: A practical handbook* (2nd ed.). London, England: Facet Publishing.

Gottlieb, L. M., Wing, H., & Adler, N. E. (2017). A systematic review of interventions on patients' social and economic needs. *American Journal of Preventive Medicine, 55*, 719-729. doi:10.1016/j.amepre.2017.05.011

Graffingna, G., Barello, S., Bonanomi, A., Lozza, E., & Hibbard, J. (2015). Measuring patient activation in Italy: Translation, adaptation, and validation of the Italian version of the patient activation measure 13 (PAM13-I). *BMC Medical Informatics and Decision Making, 15*(1), 109-122. doi:10.1186/s12911-015-0232-9

Greene, J., Hibbard, J. H., Alvarez, C., & Overton, V. (2016). Supporting patient behavior change: Approaches used by primary care clinicians whose patients have an increase in activation levels. *Annals of Family Medicine, 14*, 148-154. doi:10.1370/afm.1904

Greig, G., Entwistle, V. A., & Beech, N. (2012). Addressing complex healthcare problems in diverse settings: Insights from activity theory. *Social Science and Medicine, 74*, 305-312. doi:10.1016/j.socscimed.2011.02.006

Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods, 18*(1), 59-82. doi:10.1177/1525822X05279903

Halcomb, E. (2016). Understanding the importance of collecting qualitative data creatively. *Nurse Researcher, 23*(3), 6-7. doi:10.7748/nr.23.3.6.s2

Harrison, G., & Gannon, W. L. (2015). Victor Frankenstein's institutional review board proposal, 1790. *Science and Engineering Ethics, 21*, 1139-1157. doi:10.1007/s11948-014-9588-y

Hartwell, J., Albanese, K., Retterer, A., Martin, S., & O'Mara, M.S. (2016). A trauma patient advocate is a valuable addition to the multidisciplinary trauma team: A process improvement project. *The American Surgeon, 82*, 183-185. Retrieved from https://www.ingentaconnect.com/content/sesc/tas

Harvey, L. (2015). Beyond member-checking: A dialogic approach to the research interview. *International Journal of Research and Method in Education, 38*(1), 23-38. doi:10.1080/174372X.2014.914487

Hefner, J. L., Hilligoss, B., Sieck, C., Walker, D. M., Sova, L., Song, P. H., & McAlearney, A. S. (2016). Meaningful engagement of ACOs with communities: The new population health management. *Medical Care, 54*, 970-976. doi:10.1097/MLR.0000000000000622

Hennink, M. M., Kaiser, B. N., & Marconi, V. C. (2016). Code saturation versus meaning saturation. How many interviews are enough? *Qualitative Health Research, 27*, 591-608. doi:10.1177/1049732316665344

Hibbard, J., Greene, J., Sacks, R. M., Overton, V., & Parrotta, C. (2017). Improving population health management strategies: Identifying patients who are more likely to be users of avoidable costly care and those more likely to develop a new

chronic disease. *Health Services Research, 52,* 1297-1309. doi:10.1111/1475-6773.12545

Ho, J. P. Y., Chen, D. T. V., & Ng, D. (2016). Distributed leadership through the lens of activity theory. *Educational Management Administration and Leadership, 44*, 814-836. doi:10.1177/1741143215570302

Holota, T., Hrubec, J., Kotus, M., Holiencinova, M., & Caposova, E. (2016). The management of quality costs analysis model. *Serbian Journal of Management, 11*(1), 119-127. doi:10.5937/sjm11-9347

Huan-Niemi, E., Rikkonen, P., Niemi, J., Wuori, O., & Niemi, J. (2016). Combining quantitative and qualitative research methods to foresee the changes in the Finnish agri-food sector. *Futures, 83,* 88-99. doi:10.1016/j.futures.2016.03.007

Jain, T., Patel, R. G., & Trivedi, J. (2017). Application of polynomial chaos theory as an accurate and computationally efficient proxy model for heterogeneous steam-assisted gravity drainage reservoirs. *Energy Science and Engineering, 5*, 270-289. doi:10.1002/ese3.177

Johnson, C. C. (2015). A case for an efficient system: How relaxing midlevel provider supervision and prescriptive authority laws will reduce costs and increase access to healthcare in Alabama. *Cumberland Law Review, 45*, 565-594. Retrieved from https://www.samford.edu/cumberlandlaw/cumberland-law-review.

Johnson, M. J., & May, C. R. (2015). Promoting professional behavior change in healthcare: What interventions work, and why? A theory-led overview of systematic reviews. *BMJ Open, 5*(e008592), 1-13. doi:10.1136/bmjopen-2015-008592

Joint Commission. (2018). *Acute myocardial infarction core measure set*. Retrieved from https://www.jointcommission.org/assets/1/6/Acute%20Myocardial%20Infarction.pdf

Juarez, F. (2016). Chaos theory and financial statements. *International Journal of Mathematics, Game Theory, and Algebra, 25*, 355-369. Retrieved from www.novapublishers.com.

Kaefer, F., Roper, J., & Sinha, P. (2015). A software-assisted qualitative content analysis of new articles: Example and reflections. *Forum: Qualitative Social Research, 16*(2), 8-28. Retrieved from www.qualitative-research.net.

Kapp, J. M., Oliver, D. P., & Simoes, E. J (2016). A strategy for addressing population health management. *Journal of Public Health Management and Practice, 22*(5), E21-E28. doi:10.1097/PHH.0000000000000383

Keehan, S. P., Stone, D. A., Poisal, J. A., Cuckler, G. A., Sisko, A. M., Smith, S. D., Madison, A. J., …Lizonitz, J. M. (2017). National health expenditure projections, 2016-25: Price increases, aging push sector to 20 percent of economy. *Medical Benefits, 3*4(5), 1-2. doi:10.1377/hlthaff.2016.1627

Kennedy, B. (2016). Toward a just culture. *Nursing Management, 47*, 13-15. doi:10.1097/01.NUMA.0000483125.70978.b5

Kessels, R., Van Herck, P., Dancet, E., Annemans, L., & Sermeus, W. (2015). How to reform western care payment systems according to physicians, policymakers, healthcare executives and researchers: A discrete choice experiment. *BMC Health Services Research, 15*(1), 1–14. doi:10.1186/s12913-015-0847-7

Kiran, T., Pinto, A. D. (2016). Swimming upstream to tackle the social determinants of health. *BMJ Quality and Safety, 25*, 138-139. doi:10.1136/bmjqs-2015-005008

Knoer, S. J. (2017). Population health management: Improving the community to heal the patient. *American Journal of Health-System Pharmacy, 74*(2), 30-32. Retrieved from www.ajhp.org.

Kohn, L. T., Corrigan, J., & Donaldson, M. S. (2000). *To err is human: Building a safer health system*. Washington, DC: National Academy Press.

Koivu, K. L., & Hinze, A. M. (2017). Cases of convenience? The divergence of theory from practice in case selection in qualitative and mixed methods research. *Political Science and Politics, 50*, 1023-1027. doi:10.1017/S1049096517001214

Kovach, J. V., & Fredenall, L. D. (2015). Learning during design for six sigma projects: A preliminary investigation in behavioral healthcare. *Engineering Management Journal, 27*, 109-123. doi:10.1080/10429247.2015.1047478

Krupat, E., Dienstag, J. L., Kester, W. C., & Finkelstein, S. N. (2016). Medical students who pursue a joint MD/MBA degree: Who are they and where are they heading? *Evaluation and the Health Professions, 1*, 1-16. doi:10.1177/0163278715620831

Ku, L., Sharac, J., Bruen, B., Thomas, M., & Norris, L. (2013). Increased use of dental services by children covered by Medicaid: 2000-2010. *Medicare Medicaid Research and Review, 3*(3):e1–e12. doi:10.5600/mmrr.003.03.b01

Kurvers, R. H. G. M., Wolf, M., Naguib, M., & Krause, J. (2015). Self-organized flexible leadership promotes collective intelligence in human groups. *Royal Society Open Science, 2*, 150222-150232. doi:10.1098/rsos.150222

Landry, S., Beaulieu, M., & Roy, J. (2016). Strategy deployment in healthcare services: A case study approach. *Technological Forecasting and Social Change, 113*, 429-437. doi:10.1016/j.techfore.2016.09.006

Larson, K., Cull, W. L., Racine, A. D., & Olson, L. M. (2016). Trends in access to health care services for US children: 2000-2014. *Pediatrics, 138*, 1-11. doi:10.1542/peds.2016-2176

Lau, O., & Yohai, I. (2016). Using quantitative methods in industry. *Political Science and Politics, 49*, 524-526. doi:10.1017/S1049096516000901

Lawson, E. H., Zingmond, D. S., Stey, A. M., Hall, B. L., & Ko, C. Y. (2014). Measuring risk-adjusted value using Medicare and ACS-NSQIP: Is high quality, low cost surgical care achievable everywhere? *Annals of Surgery, 260*, 668-679. doi:10.1097/SLA.0000000000000931

Leech, N. L., & Onwuegbuzie, A. J. (2007). An array of qualitative data analysis tools: A call for data analysis triangulation. *School Psychology Quarterly, 22*, 557-584. doi:10.1037/1045-3830.22.4.557

Leedy, P. D., & Ormrod, J. E. (2016). *Practical research: Planning and design* (11th ed.). Boston, MA: Pearson

Leont'ev, A. N. (1979). *The problem of activity in psychology*. Armonk, NY. Sharpe.

Leung, L. (2015). Validity, reliability, and generalizability in qualitative research. *Research and Audit, 4*, 324-327. doi:10.4103/2249-4863.161306

Levine, D. M., Linder, J. A., & Landon, B. E. (2016). The quality of outpatient care delivered to adults in the United States, 2002 to 2013. *JAMA Internal Medicine, 176*, 1778-1790. doi:10.1001/jamainternmed.2016.6217

Li, J., Hinami, K., Hansen, L.O., Maynard, G., Budnitz, T., & Williams, M. V. (2015). The physician mentored implementation model: A promising quality improvement framework for health care change. *Academic Medicine, 90,* 303-310. doi:10.1097/ACM.0000000000000547

Liaw, S-T., & Tam, C. W. M. (2015). Ethical research or research ethics? *Australian Family Physician, 44,* 522-523. Retrieved from www.racgp.org.au.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Beverly Hills, CA: SAGE

Linden, J. F. (2017). Timing is everything: Corticothalamic mechanisms for active listening. *Neuron, 95*(1), 3-5. doi:10.1016/j.neuron.2017.06.032

Litwin, J. (2016). Engagement shift: Informed consent in the digital era: Why electronic informed consent is key to supporting today's patient-centric mantra in clinical trials. *Applied Clinical Trials, 25*(6-7), 26-32. Retrieved from www.appliedclinicaltrialsonline.com

Luke, B., & Chu, V. (2013). Social enterprise versus social entrepreneurship: An examination of the "why" and "how" in pursuing social change. *International Small Business Journal, 31,* 764-784. doi:10.1177/0266242612462598

Maclean, D. F. W., & Vannet, N. (2016). Improving trauma imaging in Wales through Kotter's theory of change. *Clinical Radiology, 71,* 427-531. doi:10.1016/j.crad.2016.02.003

Medicare Access and Children's Health Insurance Program Reauthorization Act, 144 U.S.C. § 114-10 et seq. (2015)

Magruk, A. (2015). The process of selection of the main research methods in foresight from different perspectives. *Business, Management, and Education, 13*, 234-248. doi:10.3846/bme.2015.281

Mahadevan, K. (2017). Culture-driven regeneration (CDR): A conceptual business improvement tool. *The Total Quality Management Journal, 29*, 403-420. doi:10.1108/TQM-05-2015-0061

Mamta, J., Anil, K., & Bishabh, C. C. (2017). Improved diagonal queue medical image steganography using chaos theory, LFSR, and Rabin cryptosystem. *Brain Informatics, 4*, 95-106. doi:10.1007/s40708-016-0057-z

Manning, B. T., Bohl, D. D., Saltzman, B. M., Cotter, E. J., Wang, K. C., Epley, C. T., …Bach, B R. (2017). Factors influencing patient selection of an orthopedic sports medicine physician. *Orthopaedic Journal of Sports Medicine, 5*(8), 1-5. doi:10.1177/2325967117724415

Marietto, M. L., Sanches, C., & Meireles, M. (2012). Strategy as practice: A discussion of the epistemological appropriation of historical-cultural activity theory by the activity-based view. *Revista de Administração FACES Journal, 2*(4), 93-107. doi:10.21714/1984-6975FACES2012V11N4ART1453

Marshall, B., Cardon, P., Poddar, A., & Fontenot, R. (2013). Does sampling size matter in qualitative research? A review of qualitative interviews in IS research. *Journal of Computer Information Systems, 54*(1), 11-22. doi:10.1080/08874417.2013.11645667

Marshall, C., & Rossman, G. G. (2016). *Designing qualitative research* (5th ed.). Thousand Oaks, CA: Sage

Martin, C., Cadiou, C., & Jannes-Ober, E. (2017). Data management: New tools, new organizations, and new skills in a French research institute. *The Journal of European Research Libraries, 27*(1), 73-88. doi:10.18352/lq.10196

Martinez-Mesa, J., Gonzalez-Chica, D. A., Duquia, R. P., Bonamigo, R. R., & Bastos, J. L. (2016). Sampling: How to select participants in my research study? *An Bras Dermatol, 91,* 326-330. doi:10.1590/abd1806-4841.20165254

Masters, K. (2015). The use of expert mentoring as an adjunct to healthcare quality improvement training. *Newborn and Infant Nursing Reviews, 15,* 61-63. doi:10.1053/j.nainr.2015.04.009

McChesney, C., Covey, S., & Huling, J. (2012). *Achieving your wildly important goals: The 4 disciplines of execution*. New York, NY: Free Press.

Microsoft. (2017). *Ideas take shape in OneNote*. Retrieved from www.onenote.com.

Mojtahed, R., Nunes, M. B., Martins, J. T., & Peng, A. (2014). Equipping the constructivist researcher: The combined use of semistructured interviews and decision-making maps. *Electronic Journal of Business Researcher Methods, 12,* 87-95. Retrieved from www.ejbrm.com.

Morgan, P., Himmerick, K.A., Leach, B., Dieter, P., & Everett, C. (2017). Scarcity of primary care positions may divert physician assistants into specialty practice. *Medical Care Research and Review, 74*(1), 109-122. doi:10.1177/1077558715627555

Mosadeghrad, A. M. (2015) Developing and validating a total quality management model for healthcare organizations. *The Total Quality Management Journal, 27,* 544-564. doi:10.1108/TQM-04-2013-0051

Nakamura, K., Inokuchi, R., Hiruma, T., & Doi, K. (2015). Efficacy of continuous venovenous hemofiltration on transpulmonary thermodilution measurements using the EV1000 system. *Anesthesia and Intensive Care, 43,* 541-543.

Nathan, H., & Dimick, J. B (2016). Opportunities for surgical leadership in managing population health costs. *Annals of Surgery, 264,* 909-910. doi:10.1097/SLA.0000000000001759

National Center for Health Statistics. (2014). *National hospital ambulatory medical care survey: 2014 emergency department summary tables*. Retrieved from www.cdc.gov.

Newsom, R. Amelia, C.C., & Rutter, S.J. (2016). Task-based learning and language proficiency in a business university. *Education and Learning Research Journal, 13,* 93-110. doi:10.26817/16925777.314

Nilson, C. (2017). A journey toward cultural competence: The role of researcher reflexivity in indigenous research. *Journal of Transcultural Nursing, 28,* 117-127. doi:10.1177/1043659616642825

Nix, K., & O'Shea, J. S. (2015). Improving healthcare quality in the United States: A new approach. *Southern Medical Journal, 108,* 359-363. doi:10.14423/SMJ.0000000000000299

Noble, H., & Smith, J. (2015). Issues of validity and reliability in qualitative research. *Evidence-Based Nursing, 18*(2), 34-35. doi:10.1136/eb-2015-102054

Obama, B. (2016). United States healthcare reform: Progress to date and next steps. *Journal of the American Medical Association, 316,* 525-532. doi:10.1001/jama.2016.9797

Okoe, A. F., & Boateng, H. (2015). Two-way communication on bank websites in Ghana: A data triangulation approach. *Information Development, 32*, 147-148. doi:10.1177/0266666915605556

Oostra, R. D. (2016). Physician leadership: A central strategy to transforming healthcare. *Frontiers of Health Services Management, 32*(3), 15-26. doi:10.1097/01974520-201601000-00003

Ou, A. Y., Waldman, D. A., & Peterson, S. J. (2015). Do humble CEOs matter? An examination of CEO humility and firm outcomes. *Journal of Management, 44*, 1147-1173. doi:10.1177/0149206315604187

Overgaard, S. (2015). How to do things with brackets: the epoch explained. *Continental Philosophy Review, 43*, 1-17. doi:10.1007/s11007-015-9322-8

Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and Policy in Mental Health and Mental Health Services Research, 42*, 533-544. doi:10.1007/s10488-013-0528-y

Palumbo, R., Annarumma, C., & Musella, M. (2017). Exploring the meaningfulness of healthcare organizations: a multiple case study. *International Journal of Public Sector Management, 30*, 503-218. doi:10.1108/IJPSM-10-2016-0174

Paro, P. E. P., & Gerolamo, M. C. (2017). Organizational culture for lean programs. *Journal of Organizational Change Management, 30*, 584-598. doi:10.1108/JOCM-02-2016-0039

Patchen, T., & Smithenry, D. W. (2014). Diversifying instruction and shifting authority: A cultural-historical activity theory (CHAT) analysis of classroom participant

structures. *Journal of Research in Science Teaching, 51,* 606-634. doi:10.1002/tea.21140

Patrick, S. W. (2015). The triple aim for neonatal abstinence syndrome. *The Journal of Pediatrics, 167,* 1189-1191. doi:10.1016/j.jpeds.2015.09.047

Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3ed ed.). Thousand Oaks, CA: SAGE.

Patton, W., & McMahon, M. (2015). The systems theory framework of career development: 20 years of contribution to theory and practice. *Australian Journal of Career Development, 24,* 141-147. doi: 10.1177/1038416215579944

Pedersen, S., & Bang, J. (2016). Historicizing affordance theory: A rendezvous between ecological psychology and cultural-historical activity theory. *Theory and Psychology, 26,* 731-750. doi:10.1177/0959354316669021

Peters, K., & Halcomb, E. (2015). Interviews in qualitative research. *Nurse Researcher, 22*(4), 6-7. doi:10.7748/nr1994.04.1.3.4.c6292

Peterson, S. M., Liaw, W. R., Tran, & C., Bazemore, A. W. (2015). Estimating the residency expansion required to avoid projected primary care physician shortages by 2035. *Annals of Family Medicine, 13,* 107-114. doi:10.1370/afm.1760

Poincaré, J. H. (1890). Sur le problème des trois corps et les équations de la dynamique. Divergence des séries de M. Lindstedt. *Acta Mathematica.* 13, 1-270. doi:10.1007/BF02392506

Polit, D. F., & Beck, C. T. (2017). *Essentials of nursing research: Appraising evidence for nursing practice* (9th Ed.). Philadelphia, PA: Wolters Kluwer Health.

Polukhina, F. (2015). Comprehensive field work instructions: A review of applied ethnography. Guidelines for field research. *The Qualitative Report, 20*, 826-829. Retrieved from www.nova.edu.

Pryor, R. (2016). Applying chaos theory to work: The chaos theory of careers. International *Journal of Mathematics, Game Theory, and Algebra, 25*, 369-382. Retrieved from www.novapublishers.com.

Quinn, J. F., & Perelli, S. (2016). First and foremost, physicians: The clinical versus leadership identities of physician leaders. *Journal of Health Organization and Management, 30*, 711-728. doi:10.1108/JHOM-05-2015-0079

Rademakers, J., Maindal, H. T., Steinsbekk, A., Genischen, J., Brenk-Franz, K., & Heniks, M. (2016). Patient activation in Europe: An international comparison of psychometric properties and patients' scores on the short form Patient Activation Measure (PAM-13). *BMC Health Services Research, 16*, 570-577. doi:10.1186/s12913-016-1828-1

Ragab, M., & Arisha, A. (2013). Knowledge management and measurement: A critical review. *Journal of Knowledge Management, 17*, 873-901. doi:10.1108/JKM-12-2012-0381

Randall, W. S., Hawkins, T. G., Haynie, J. J., Nowicki, D. R., Armenakis, A. A., & Geary, S. R. (2015). Performance-based logistics and interfirm team processes: An empirical investigation. *Journal of Business Logistics, 36*, 212-230. doi:10.1111/jbl.12084

Ritchie, J., & Lewis, J. (2003). *Qualitative research practice: A guide for social science students and researchers*. London, England: SAGE.

Roberts, N. J., Kidd, L., Dougall, N., Patel, I. S., McNarry, S., & Nixon, C (2016). Measuring patient activation: The utility of the Patient Activation Measure within a UK context-Results from four exemplary studies and potential future applications. *Patient Education and Counseling, 99,* 1739-1746. doi:10.1016/j.pec.2016.05.006

Robertson-Cooper, H. (2015). What you need to know about Medicare's new quality and resource use report. *Family Practice Management, 22*(6), 19-25. Retrieved from www.aafp.org.

Ronan, B. P. (2017). Remaining financially viable in a time of healthcare transition. *Frontiers of Health Services Management, 34*(2), 14-24. doi:10.1097/HAP.0000000000000019

Roth, W. M., & Lee, Y. L. (2007). Vygotsky's neglected legacy: Cultural-historical activity theory. *Review of Educational Research, 77,* 186-232. doi:10.3102/0034654306298273

Roth, W. M., Radford, L., & Lacroix, L. (2012). Working with cultural-historical activity theory. *Forum Qualitative Social Research, 13*(2), 1-15. Retrieved from www.qualitative-research.net.

Rutherford, R. (2017). Five trends in healthcare that will change the way managers manage. *The Journal of Medical Practice Management, 32,* 239-242. Retrieved from www.greenbranch.com.

Ryan, P., & Dundon, T. (2008). Case research interviews: Eliciting superior quality data. *International Journal of Case Method Research and Application, 4,* 443-450. Retrieved from www.WACRA.org

Sahoo, P. K., Mohapatra, S. K., & Wu. S. L. (2016). Analyzing healthcare big data with prediction for future health condition. *IEEE Access, 4*, 9786-9799. doi:10.1109/ACCESS.2016.2647619

Santistevan, J. (2018). *Sepsis CMS core measure (SEP-1) highlights*. Retrieved from https://www.acep.org/how-we-serve/sections/quality-improvement--patient-safety/newsletters/march-2016/sepsis-cms-core-measure-sep-1-highlights/#sm.000qll42b1efmd4jqwz25yb1rrp4a

Savitz, L. A., & Savitz, S. T. (2016). Can delivery systems use cost-effectiveness analysis to reduce healthcare costs and improve value? *F1000 Research, 5*, 1-6. doi:10.12688/f1000research.7531.1

Schaum, K. D. (2017). Top 10 Medicare reimbursement regulations currently impacting wound care practices. *Advances in Skin and Wound Care, 30*(2), 57-60. doi:10.1097/01.ASW.0000511536.08615.4a

Sedgwick, P. (2013). Snowball sampling. *British Medical Journal, 347*, 1-3. doi:10.1136/bmj.f7511

Senqupta, R., Small, B. L., Smoot, T., Lopez-Plaze, I., & DiGiovine, B. (2015). *Optimizing limited ICU resources: Appropriate transfusions in the ICU: Can midlevel providers help improve compliance*. Paper presented at the 2015 American Thoracic Society International Conference, Denver, CO. Abstract retrieved from www.atsjournals.org

Seymour, C.W., Liu, V.X., Iwashyna, T.J., Brunkhorst, F.M., Rea, T.D., Scherag, A., Rubenfield, G., …Angus, D.C. (2016). Assessment of clinical criteria for sepsis:

For the third international consensus definitions for sepsis and septic shock (Sepsis-3). *JAMA, 315*, 762-774. doi:10.1001/jama.2016.0288

Shirey, M. R., & White-Williams, C. (2015). Boundary spanning leadership practices for population health. *Journal of Nursing Administration, 45*, 411-415. doi:10.1097/nna.0000000000000223

Sidorov, J. (2015). Best practices for health outcomes public reporting. *Population Health Management, 18*, 399-401. doi:10.1089/pop.2015.0033

Silver, J. J. (2015). Cancer prehabilitation and its role in improving health outcomes and reducing healthcare costs. *Seminars in Oncology Nursing*, *31*(1), 13-30. doi:10.1016/j.soncn.2014.11.003

Simon, J., & Houle, M. (2017). Translating improvement methodology into healthcare culture. *Business Process Management Journal*, *23*, 769-778. doi:10.1108/BPMJ-02-2017-0040

Simpson, A., & Quigley, C. F. (2016). Member checking process with adolescent students: Not just reading a transcript. *The Qualitative Report*, *21*, 377-392. Retrieved from tqr.nova.edu.

Sims, S., Hewitt, G., & Harris, R. (2015). Evidence of a shared purpose, critical reflection, innovation and leadership in interprofessional healthcare teams: A realist synthesis. *Journal of Interprofessional Care, 29*, 209-215. doi:10.3109/13561820.2014.941559

Sipola, S., Puhakka, V., & Mainela, T. (2016). A start-up ecosystem as a structure and context for high growth. *Global Entrepreneurship: Past, Present, and Future, 29*, 179-202. doi:10.1108/S1571-502720160000029012

Sivarajan, V., Nawathe, P., Olshove, V., & Phillips, A. (2016). 1232: Operating room huddle improved goal alignment and achievement in pediatric cardiac surgery patients. *Critical Care Medicine, 44*, 383. doi:10.1097/01.ccm.0000509906.58299.d5

Smith, R. W., Orlando, E., & Berta, W. (2018). Enabling continuous learning and quality improvement in health care. *International Journal of Health Care Quality Assurance, 31*, 587-599. doi:10.1108/IJHCQA-10-2017-0198

Sparkes, A. (2014). Developing mixed methods research in sport and exercise psychology: Critical reflections on five points of controversy. *Psychology of Sport and Exercise, 16*, 49-58. doi:10.1016/j.psychsport.2014.08.014

Srimulyani, V. A., Rustiyangsih, S., & Kumiawati, D. (2016). Dampak integrative leadership dan employee engagement terhadap Perilaku extra-role. *Jurnal Manajemen Teknologi, 15*(1), 36-50. doi:10.12695/jmt.2016.15.1.3

Stevens, N., Edwards, L., Balayah, Z., Hopper, R., & Knowles, C. (2016). Risk-based survey evidence supports electronic informed consent as a recruitment method for UK clinical trials. *Journal of Clinical Epidemiology, 77*(5), 15-18. doi:10.1016/j.jclinepi.2016.05.005

Styhre, A., Roth, A. & Roth, J. (2016). Who will lead the physicians unwilling to lead? Institutional logics and double-bind situations in healthcare leadership. *Leadership and Organization Development Journal, 37*, 325-340. doi:10.1108/LODJ-10-2012-0137

Tao, W., Agerholm, J., & Burtström, B. (2016). The impact of reimbursement systems on equity in access and quality of primary care: A systematic literature review. *BMC Health Services Research, 16*, 1-10. doi:10.1186/s12913-016-1805-8

Teixeria, B., Gregory, P. A. M., & Austin, Z. (2017). How are pharmacists in Ontario adapting to practice change? Results of a qualitative analysis using Kotter's change management model. *Canadian Pharmacists Journal, 150*, 198-205. doi:10.1177/1715163517701470

Teodorczuk, A., Mukaetova-Ladinska, E., Corbett, S., & Welfare, M. (2014). Deconstructing dementia and delirium hospital practice: Using cultural-historical activity theory to inform education approaches. *Advances in Health Sciences Education: Theory and Practice, 20*, 745-764. doi:10.1007/s10459-014-9562-0

Thompson, I. (2015). Researching contradictions: Cultural-historical activity theory research (CHAT) in the English classroom. *English in Australia, 50*(3), 21-26. Retrieved from www.aate.org.au.

Tkachenko, O., & Ardichvili, A. (2017). Cultural-historical activity theory's relevance to HRD: A review and application. *Human Resource Development Review, 16*, 135-157. doi:10.1177/1534484317696717

Tobin-Dyler, E., & Teitelbaum, J. (2016). Training the 21st-century healthcare team: Maximizing interprofessional education through medical-legal partnership. *Academic Medicine, 91*, 761-765. doi:10.1097/ACM.0000000000000943

Tonidandel, S., King, E. B., & Cortina, J. M. (2018). Big data methods. *Organizational Research Methods, 21*, 525-547. doi:10.1177/1094428116677299

Ulrich, B. (2017). Just culture and its impact on a culture of safety. *Nephrology Nursing Journal: Journal of the American Nephrology Nurses' Association, 44*, 207-208. Retrieved from https://www.annanurse.org/resources/products/nephrology-nursing-journal

Ulrich's Global Serials Directory. (2018). *UlrichsWeb Global Serials Directory*. Retrieved from https://ulrichsweb-serialssolutions-com.ezp.waldenulibrary.org/

Valentinov, V., & Chatalova, L. (2016). Institutional economics and social dilemmas: A systems theory perspective. *Systems Research and Behavioral Science, 32*, 514-521. doi:10.1002/sres.2353

van Rijnsoever, F. J. (2017). (I can't get no) saturation: A simulation and guidelines for sample sizes in qualitative research. *PLoS One, 12*, 1-17. doi:10.1371/journal.pone.0181689 J

Varpio, L., Ajjawi, R., Monrouxe, L. V., O'Brien, B. C., & Rees, C. E. (2017). Shedding the cobra effect: Problematizing thematic emergence, triangulation, saturation, and member checking. *Medical Education, 51*(1), 40-50. doi:10.1111/medu.13124

Varsha, A., & Ganesh, L. (2017). Implementing quality healthcare strategies for improving service delivery at private hospitals in India. *Journal of Health Management, 17*(1), 159-169. doi:10.1177/0972063416682638

Vaughn, P., & Turner, C. (2016). Decoding via coding: Analyzing qualitative text data through thematic coding and survey methodologies. *Journal of Library Administration, 56*, 41-51. doi:10.1080/01930826.2015.1105035

Venkataraman, S. (2015). Cost-quality tradeoff in healthcare: Does it affect patient experience? *The Quality Management Journal, 22*(3), 38-47. doi:10.1080/10686967.2015.11918440

Venkatesh, A. K., & Goodrich, K. (2015). Emergency care and the national quality strategy: Highlights from the Centers for Medicare and Medicaid Services. *Annals of Emergency Medicine, 65*, 396-399. doi:10.1016/j.annemergmed.2014.07.009

Vermeulen, L.C. (2018). Strategic planning in challenging times. *American Journal of Health-System Pharmacy, 75*, 24-26. Retrieved from http://www.ajhp.org

Volgger, M., Mainil, T., Pechlaner, H., & Mitas, O. (2015). Health region development from the perspective of system theory—an empirical cross-regional case study. *Social Science and Medicine, 124*, 321-330. doi:10.1016/j.socscimed.2014.05.004

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.

Wallace, J. C., Butts, M. M., Johnson, P. D., Stevens, F. G., & Smith, M. B. (2016). A multilevel model of employee innovation: Understanding the effects of regulatory focus, thriving, and employee involvement climate. *Journal of Management, 42*, 982-1004. doi:10.1177/0149206313506462

Ward, C., & Canares, T. L. (2017). Urgent care as intermediary care: How inbound and outbound transport can enhance care of community-based pediatric emergencies. *Clinical Pediatric Emergency Medicine, 18*(1), 14-23. doi: 10.1016/j.cpem.2017.02.002

Watson, R. (2015). Quantitative research. *Nursing Standard, 29*(31), 44-50. doi:10.7748/ns.29.31.44.e8681

Watters, D. A., Hollands, M. J., Gruen, R. L., Maoate, K., Perndt, H., McDougall, R. J., Morriss, W. W., …McQueen, K. A. (2015). Perioperative mortality rate (MOMR): A global indicator of access to safe surgery and anesthesia. *World Journal of Surgery, 39*, 856-864. doi:10.1007/s00268-014-2638-4

Waznonis, A.R. (2014). Methods and evaluations for simulation debriefing in nursing education. *Journal of Nursing Education, 53*(8), 459-465. doi:10.3928/01484834-20140722-13

West, L. A., Cole, S., Goodkind, D., & He, W. (2014). *65+ in the United States: 2010. Special Studies: Current population reports*. United States Department of Health and Human Services and United States Department of Commerce. Retrieved from www.census.gov.

White, L., Burger, K., & Yearworth, M. (2016). Understanding behavior in problem structuring methods interventions with activity theory. *European Journal of Operational Research, 249*, 983-1004. doi:10.1016/j.ejor.2015.07.044

Whittaker, W., Anselmi. L., Kristensen, S. R., Lau, Y.S., Bailey, S., Bower, P., Checkland, K., …Hodgson, D. (2016). Associations between extending access to primary care and emergency department visits: A difference-in-differences analysis. *PLoS Medicine, 13*(9), e1002113. doi:10.1371/journal.pmed.1002113

Whittington, J. W., Nolan, K., Lewis, N., & Torres, T. (2015). Pursuing the triple aim: The first seven years. *The Milbank Quarterly, 93*, 263-300. doi:10.1111/1468-0009.12122

Wiesche, L., Schacht, M., Werners, B. (2016). Strategies for interday appointment scheduling in primary care. *Health Care Management Science, 20*, 403-418. doi:10.1007/s10729-016-9361-7

Wilson, V. (2016). Research methods: Triangulation. *Evidence Based Library and Information Practice, 9*(1), 74-75. doi:10.18438/b86s5f

Winters, D., Casten, R., Rovner, B., Murchison, A., Leiby, B. E., Haller, J. A., Hark, L., …Pizzi, L. T. (2016). Cost-effectiveness of behavior activation versus supportive therapy on adherence to eye exams in older African Americans with diabetes. *American Journal of Medical Quality, 32,* 661-667. doi:10.1177/1062860616680290

Wolf, C., & Floyd, S. W. (2017). Strategic planning research: Toward a theory-driven agenda. *Journal of Management, 43*, 1754-1788. doi:10.1177/0149206313478185

Yin, R. K. (2015). *Qualitative research from start to finish* (2ed ed.). New York, NY: The Guilford Press.

Yin, R. K. (2018). *Case study research design and methods* (6th Ed.). Los Angeles, CA: SAGE.

Yasukawa, K., Brown, T., & Black, S. (2013). Disturbing practices: Training workers to be lean. *Journal of Workplace Learning, 26,* 392-405. doi:10.1108/JWL-09-2013-0068

Yoon, Y. S., Ham, D. H., & Yoon, W. C. (2016). Application of activity theory to analysis of human-related accidents: Method and case studies. *Reliability Engineering and System Safety, 150,* 22-34. doi:10.1016/j.ress.2016.01.01

Appendix A: NIH Certificate of Completion

Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Christopher Poteet** successfully completed the NIH Web-based training course "Protecting Human Research Participants".

Date of completion: 10/28/2017.

Certification Number: 2545247.

Appendix B: Interview Protocol

Interview Protocol

Introduction Script

Good morning/evening. My name is Christopher Poteet, and I am a doctoral candidate with the Doctor of Business Administration program at Walden University. I am conducting a study entitled *Reduction of CMS Reimbursement Penalty Risk: Strategies for High quality, Low cost Care* that is an examination of strategies that successful healthcare center leaders have used to reduce their risk of penalties under MACRA's Quality Payment Programs. Thank you for agreeing to be a participant in this study. As I advised you in the participant consent form, I will be recording this interview, could you please confirm that you continue to consent to this?

[Begin MP3 Recording]

For the benefit of this recording, the date, time, and participant number are [speak date, time, and participant number]. Will you please provide verbal consent to this recording and subsequent transcript creation to allow me to capture your consent on record? Once the transcript of this interview has been created, you will be offered an opportunity to review the transcript to ensure that your intent and meanings were accurately captured.

All information that you provide me will be kept confidential; your name, company, and geographic location will not be used in the study findings. I will be using your responses to examine themes and strategies that have been used across healthcare centers that have successfully landed in the high quality, low cost quadrant of the 2016 Quality Resource Use Report, as indicated by the CMS PUF. Please remember that your

participation is voluntary and you have the right to stop this interview at any time. If at any time you would like to take a break, please do not hesitate to let me know. Do you have any questions before we begin?

Interview Questions: CHAT-III Framework

Ice Breaker: What is your role in your company? How long have you been with your company? How long has your company been in the high quality, low cost quadrant?

1. What strategies have leaders in your healthcare centers implemented that have successfully improved your facilities QPP quality scores?
2. How did leaders go about implementing the strategy that successfully improved the facilities QPP quality scores?
    a. Who were the key players in implementation?
    b. How did you divide the labor for implementation?
    c. What rules were set for this strategy?
    d. What tools were needed to implement the strategy?
    e. Were there any external partners that impacted this strategy?
        i. Who were the key players in that partner?
        ii. How was labor divided by that partner?
        iii. What rules were used to align your company and the partner?
        iv. What tools were needed for this alignment?
3. What strategies have leaders in your healthcare centers implemented that have successfully reduced your facilities cost per capita or cost per beneficiary?

4. How did leaders go about implementing the strategy that successfully reduced the facilities cost per capita or cost per beneficiary?

a. Who were the key players in implementation?

b. How did you divide the labor for implementation?

c. What rules were set for this strategy?

d. What tools were needed to implement the strategy?

e. Were there any external partners that impacted this strategy?

i. Who were the key players in that partner?

ii. How was labor divided by that partner?

iii. What rules were used to align your company and the partner?

iv. What tools were needed for this alignment?

5. What metrics did you use to define success for each of your strategies?

6. Will you please tell me about the culture of your organization that made your strategies successful?

7. Will you please tell me about the history of your organization that leads to your strategies?

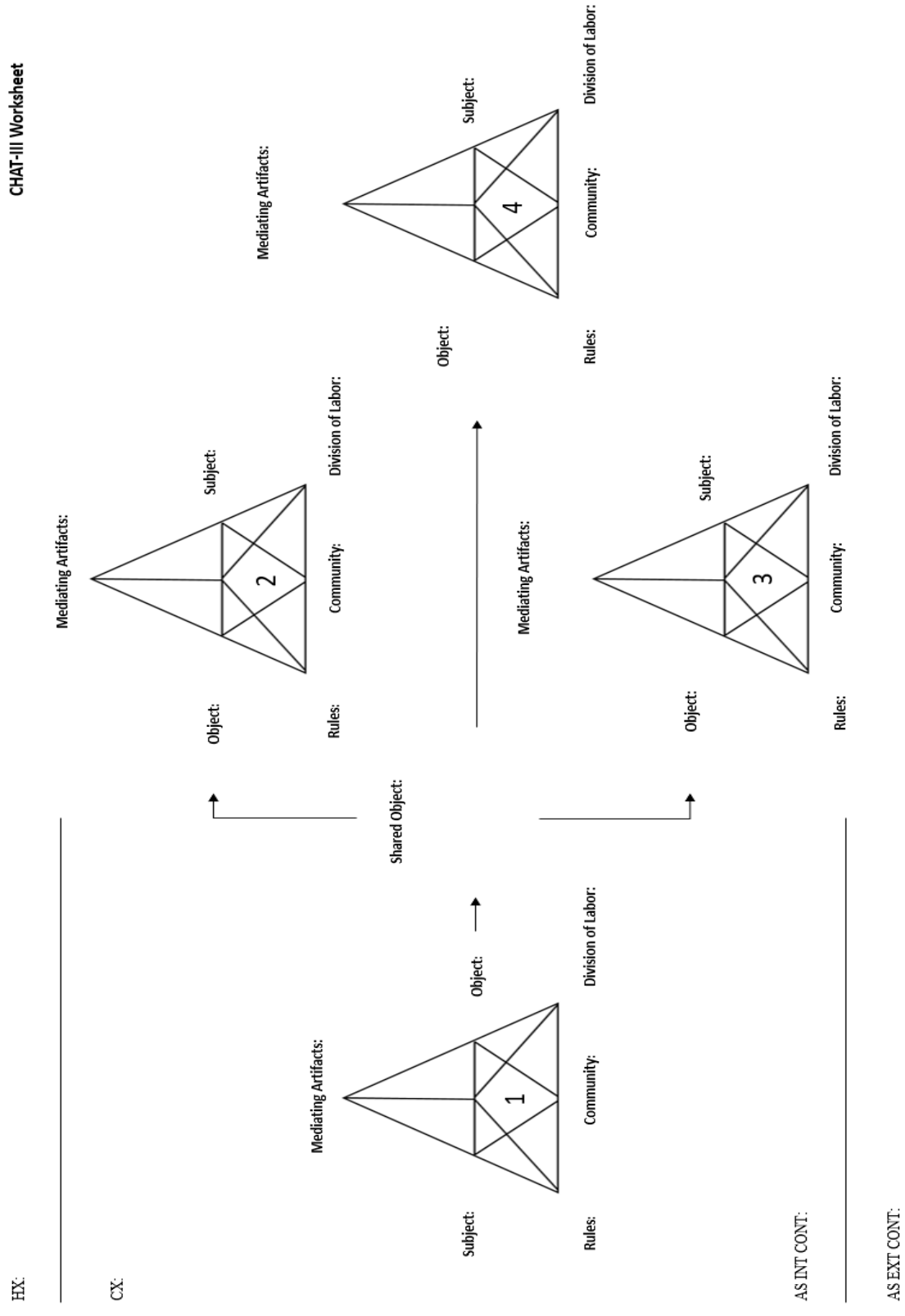
8. What strategies have leaders in your healthcare centers used to resolve barriers to implementation of your quality and cost strategies?

9. Is there any additional information that we did not cover that you would like to discuss, or any clarifications that you would like to make?

Interview Closure and Thank You

I would like to take a moment to thank you again for your time and your invaluable answers. I will be transcribing this information over the course of the next few weeks; if you are willing, I would like to send you a copy via e-mail to review to ensure that I have accurately captured the intent of your answers and give you the opportunity to clarify any of the information that you provided today. This feedback is voluntary; would you like me to send you the transcripts for you to review or are you comfortable with not reviewing them? Again, thank you for your time and thoughts. If you have any questions or additional comments, please do not hesitate to reach out to me as I am happy to resolve any needs you may have.

Appendix C: CHAT—III Worksheet



Appendix D: Permissions

List of Figures Requiring Permissions

Figure 1. Vygotsky's (1978) Generation I CHAT.

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Figure 2. Leonti'ev's (1979) Generation II CHAT.

Figure 3. Engeström's (1987) Generation III CHAT.

Figure 4. Citation frequencies of CHAT in English language literature within the Institution for Scientific Information's citation database.

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Appendix E: Medicare Provider Utilization and Payment Data: Physician and Other Supplier PUF CY2015 Data Dictionary

Column Identifier	Description	Type
National Provider Identifier	National Provider Identifier (NPI) for the performing provider on the claim. The provider NPI is the numeric identifier registered in NPPES.	Plain Text
Last Name/Organization Name of the Provider	When the provider is registered in NPPES as an individual (entity type code='I'), this is the provider's last name. When the provider is registered as an organization (entity type code = 'O'), this is the organization name.	Plain Text
First Name of the Provider	When the provider is registered in NPPES as an individual (entity type code='I'), this is the provider's first name. When the provider is registered as an organization (entity type code = 'O'), this will be blank.	Plain Text
Middle Initial of the Provider	When the provider is registered in NPPES as an individual (entity type code='I'), this is the provider's middle initial. When the provider is registered as an organization (entity type code = 'O'), this will be blank.	Plain Text
Credentials of the Provider	When the provider is registered in NPPES as an individual (entity type code='I'), these are the provider's credentials. When the provider is registered as an organization (entity type code = 'O'), this will be blank.	Plain Text
Gender of the Provider	When the provider is registered in NPPES as an individual (entity type code='I'), this is the provider's gender. When the provider is registered as an organization (entity type code = 'O'), this will be blank.	Plain Text
Entity Type of the Provider	Type of entity reported in NPPES. An entity code of 'I' identifies providers registered as individuals and an entity type code of 'O' identifies providers registered as organizations.	Plain Text
Street Address 1 of the Provider	The first line of the provider's street address, as reported in NPPES.	Plain Text
Street Address 2 of the Provider	The second line of the provider's street address, as reported in NPPES.	Plain Text

City of the Provider	The city where the provider is located, as reported in NPPES.	Plain Text
Zip Code of the Provider	The provider's zip code, as reported in NPPES.	Plain Text
State Code of the Provider	The state where the provider is located, as reported in NPPES. The fifty United States and the District of Columbia are reported by the state postal abbreviation. The following values are used for other areas: 'XX' = 'Unknown' 'AA' = 'Armed Forces Central/South America' 'AE' = 'Armed Forces Europe' 'AP' = 'Armed Forces Pacific' 'AS' = 'American Samoa' 'GU' = 'Guam' 'MP' = 'North Mariana Islands' 'PR' = 'Puerto Rico' 'VI' = 'Virgin Islands' 'ZZ' = 'Foreign Country'	Plain Text
Country Code of the Provider	The country where the provider is located, as reported in NPPES. The country code will be 'US' for any state or United States possession. For foreign countries (i.e., state values of 'ZZ'), the provider country values include the following: 'AE' = 'United Arab Emirates'; 'AG'='Antigua'; 'AR'= 'Argentina'; 'AU'= 'Australia'; 'BO'='Bolivia'; 'BR'= 'Brazil'; 'CA'= 'Canada'; 'CH'= Switzerland'; 'CN'= China'; 'CO'= Colombia'; 'DE'= 'Germany'; 'ES'= 'Spain'; 'FR'= France'; 'GB'= Great Britain'; 'HU'= Hungary'; 'IL'= Israel'; 'IN'= India'; 'IS'= Iceland; 'IT'= Italy'; 'JP'= Japan'; 'KR'= 'Korea'; 'KW'='Kuwait'; 'KY'='Cayman Islands'; 'LB'='Lebanon'; 'MX'='Mexico'; 'NL'= 'Netherlands'; 'NO'='Norway'; 'NZ'='New Zealand'; 'PA'='Panama'; 'PK'= 'Pakistan'; 'RW'='Rwanda'; 'SA'= 'Saudi Arabia'; 'SY'= 'Syria'; 'TR'= 'Turkey'; ' TH'='Thailand'; 'VE'= 'Venezuela' .	Plain Text
Provider Type	Derived from the provider specialty code reported on the claim. For providers that reported more than one specialty code on their claims, this is the specialty code associated with the largest number of services.	Plain Text

Medicare Participation Indicator	Identifies whether the provider participates in Medicare and/or accepts assignment of Medicare allowed amounts. The value will be 'Y' for any provider that had at least one claim identifying the provider as participating in Medicare or accepting assignment of Medicare allowed amounts.	Plain Text
Place of Service	Identifies whether the place of service submitted on the claims is a facility (value of 'F') or non-facility (value of 'O'). Non-facility is generally an office setting; however other entities are included in non-facility. See "Appendix B – Place of Service Descriptions" for the types of entities included in facility and non-facility.	Plain Text
HCPCS Code	Healthcare Common Procedure Coding System (HCPCS) code for the specific medical service furnished by the provider.	Plain Text
HCPCS Description	Description of the HCPCS code for the specific medical service furnished by the provider. HCPCS descriptions associated with CPT codes are consumer friendly descriptions provided by the AMA. CPT Consumer Friendly Descriptors are lay synonyms for CPT descriptors that are intended to help healthcare consumers who are not medical professionals understand clinical procedures on bills and patient portals. CPT Consumer Friendly Descriptors should not be used for clinical coding or documentation. All other descriptions are CMS Level II descriptions provided in the long form. Due to variable length restrictions, the CMS Level II descriptions have been truncated to 256 bytes. As a result, the same HCPCS description can be associated with more than one HCPCS code. For complete CMS Level II descriptions, visit http://www.cms.gov/Medicare/Coding/HCPCSReleaseCodeSets/Alpha-Numeric-HCPCS.html.	Plain Text

HCPCS Drug Indicator	Identifies whether the HCPCS code for the specific service furnished by the provider is an HCPCS listed on the Medicare Part B Drug Average Sales Price (ASP) File. For additional information on the ASP drug pricing, visit http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Part-B-Drugs/McrPartBDrugAvgSalesPrice/index.html.	Plain Text
Number of Services	A number of services provided; note that the metrics used to count the number provided can vary from service to service.	Number
Number of Medicare Beneficiaries	A number of distinct Medicare beneficiaries receiving the service.	Number
Number of Distinct Medicare Beneficiary/Per Day Services	A number of distinct Medicare beneficiary/per day services. Since a given beneficiary may receive multiple services of the same type (e.g., single vs. multiple cardiac stents) on a single day, this metric removes double-counting from the line service count to identify whether a unique service occurred.	Number
Average Medicare Allowed Amount	Average of the Medicare allowed amount for the service; this figure is the sum of the amount Medicare pays, the deductible and coinsurance amount that the beneficiary is responsible for paying, and any amounts that a third party is responsible for paying.	Number
Average Submitted Charge Amount	Average of the charges that the provider submitted for the service.	Number
Average Medicare Payment Amount	The average amount that Medicare paid after deductible and coinsurance amounts have been deducted for the line item service.	Number
Average Medicare Standardized Amount	The average amount that Medicare paid after beneficiary deductible and coinsurance amounts have been deducted for the line item service and after standardization of the Medicare payment has been applied.	Number