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# Hospital vertical integration into sub-acute care services

Carolyn Tory Harper Hogan
*University of Alabama at Birmingham*

# HOSPITAL VERTICAL INTEGRATION OF SUB-ACUTE CARE SERVICES

by

C. TORY H. HOGAN

CHRISTY HARRIS LEMAK, COMMITTEE CHAIR
LARRY HEARLD
NATALIYA IVANKOVA
NIR MENACHEMI
BISAKHA SEN
JACK WHEELER

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## ABSTRACT

The purpose of this dissertation was to examine the antecedents and outcomes of hospital vertical integration into Sub-Acute Care (SAC). Using a sequential quan→qual mixed methods design, we examined why hospitals adopt a vertical integration strategy and the relationship this strategy has to performance. Findings from this dissertation are important to hospital administrators as they seek to find ways to respond to the changing payment structures established during the Affordable Care Act. The results of this dissertation suggest that not all market and organizational factors are associated with vertical integration strategies toward SAC. They also suggest that vertical integration into SAC may enable organizations to better manage some types of patients as they transition to from acute care to SAC. Lastly, our findings also suggest that organizations that choose to vertically integrate into SAC do not experience better financial performance. The findings of this study are of significant interest to policymakers and practitioners as they seek to improve outcomes for patients who transition between acute care and SAC.

Keywords: vertical integration, sub-acute care, post-acute care, mixed methods, readmissions, organizational performance

# DEDICATION

To Paul,

My loving and supportive husband who made it possible for me to complete this work. I hope I am as committed with your dreams as you have been with mine.

To Isabel and Connor,

I hope that in some small way this work is able to make the world you live in a better place.

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# CHAPTER 1

## INTRODUCTION

The purpose of this chapter is to provide an overview of the dissertation. The common theme of this study is hospital vertical integration into sub-acute care. The chapter begins with a background section regarding why the Affordable Care Act (ACA) has created a demand to examine this topic. It then provides an overview of the SAC industry and vertical integration. Lastly, the chapter will conclude with an overview of each of chapter and how they relate to each other.

### Background

The Affordable Care Act (ACA) has attempted to curb unnecessary healthcare spending, decrease fragmentation, and eliminate the widespread gaps in quality that plagues the U.S. health care system. Care coordination and improved care delivery are considered two potential areas that can help reduce spending (Berwick & Hackbarth, 2012). As a result, the ACA introduced value-based payment mechanisms in an attempt to incentivize the healthcare delivery system to provide higher quality care and eliminate unnecessary spending by reducing fragmentation and waste. Some of these value-based payment mechanisms are Accountable Care Organizations (ACOs), the Hospital Readmissions Reduction Act (HHRP), and the bundled payment program. ACOs unify all providers under one consortium with the goal of serving populations of patients within a global budget (Fisher, Staiger, Bynum, & Gottlieb, 2007). The HRRP penalizes

hospitals with excessive unplanned readmissions. Bundled payments group multiple phases of treatment associated with a single episode of care together under one payment. As a result, organizations are examining their role within the entire continuum of care and determining how they will be able to be a part of a coordinated care delivery system (Guterman, Davis, Schoenbaum, & Shih, 2009).

### *Sub-Acute Care*

Organizations have to decide how to respond to the new incentives to provide coordinated care. The continuum includes (but is not limited to): acute care centers, outpatient surgery centers, physician offices, sub-acute care centers, dialysis centers, and diagnostic imaging centers. Policymakers, however, have become concerned with sub-acute care (SAC) centers and the role they play in the fragmentation of healthcare and medical waste (Mor & Besdine, 2011). The SAC industry provides inpatient care to patients who no longer require acute care services but still require 24-hour care during this phase of their recovery (Hyatt, 1993; McDowell, 1990). This part of healthcare is also commonly referred to as "post-acute", "step-down", "transition" or "specialty nursing services" (Freaney, 1993). In this dissertation, SAC refers to two types of providers: skilled nursing facilities (SNF) and inpatient rehabilitation facilities (IRF). There has been a focus on the relationship between SAC and hospital readmissions (Jenks, Williams & Coleman, 2009). A quarter of all Medicare beneficiaries discharged to a SAC facility are readmitted to a hospital within 30 days, costing an estimated $4.34 billion in 1996 (Mor, Intrator, Feng & Grabowski, 2010). Hospital readmissions of SAC patients are costly and frequent. Between 2000 and 2006, the rate of re-hospitalizations from SNFs alone grew by 29 percent (Mor, et al., 2010). Care for SAC patients is

complex. Utilizers of SAC are often Medicare recipients and can be grouped into three types: (1) those expected to recover upon completion of rehabilitation services, (2) those who need supportive care services, and 3) those who need palliative care management (Mor & Besdine, 2011). Categorizations into these groups are not mutually exclusive and patients can very quickly move from one category to another. Following an acute procedure, a patient can start off expecting to fully rehabilitate and move into a state of palliative care within hours. In addition, SAC patients often have multiple conditions being managed by multiple doctors, making the lines of clinical responsibility blurry.

### *Value Based Payment Programs*

Policy makers believe that payment reforms addressing readmissions will help incentivize better transitions of care from acute care facilities to SAC and will encourage more proactive preventative care among providers in this field that can lead to unnecessary utilization. One of the most notable value based payment programs is the Hospital Readmission Reduction Program (HRRP) (Section §3025) (CMS, 2012), which directly addresses the issue of unnecessary readmissions. CMS will reduce payments to hospitals with excess 30-day readmissions for Acute Myocardial Infarction (AMI), Heart Failure (HF) and Pneumonia (PN), creating a financial incentive for hospitals to reduce readmissions in these areas. Bundled payments also link acute care payments with sub-acute care payments for diseases. ACOs create opportunities for groups of providers to participate in cost savings by managing the entire care spectrum of patients. They also take on financial risk associated with patients who over-utilize healthcare. These three components of the ACA create incentives for hospitals and SAC facilities—which have historically operated independently of each other—to establish themselves as part of an

integrated system. Vertical integration may enable providers to better manage the complexity associated with coordinating care. This will enable them to take advantage of the changes brought on by the ACA. Organizations may seek to reduce the financial risks associated with the HRRP, bundled payments, and ACOs through more direct management of patients as they move from acute care centers to SAC.

### *Vertical Integration*

Organizations may respond by altering their structures or relationships with other providers in their environment and will do so through vertical integration (Shay & Mick, 2013; Zigmond, 2010). Vertical integration refers to the acquisition of various components of the continuum of care in an effort to reduce market transaction costs (Williamson, 1975), increase asset specificity associated with care (Scott & Davis, 2007), and mitigate environmental threats. It is often considered to be a "make or buy" decision. An organization's ability to respond through vertical integration may be determined by its current organizational type and financial status (Wheeler, et al., 2006).

The ultimate goal of vertical integration within healthcare is to improve the health of patients and thus improve the performance outcomes of healthcare organizations (Byrne & Walmus, 1999). Reorganization within the healthcare sector provides opportunities for organizations to become more efficient and reduce transaction costs. Research has traditionally examined vertical integration as it refers to the relationships between hospitals and physicians (Budetti, Shortell, Waters, Alexander, Burns, Gillies, & Zuckerman, 2002; Gorey, 1993; Lake, Devers, Brewster, & Casalino 2003), primary care physicians and specialty medical groups (Rittenhouse, Grumbach, O'Neil, Dower, & Bindman, 2004; Robinson, & Casalino, 1996) or between hospitals, ambulatory care and

insurance providers (Brown, 1996; Shortell, Gillies & Anderson, 1994; Morrisey, Alexander, Burns, & Johnson, 1999).

There is a very small body of literature that examines the vertical integration of hospitals and SAC providers. Wheeler, Burkhardt, Alexander, & Magnus (1999) examined financial and organizational determinants of vertical integration into SAC and found that not-for-profit status and financial performance played a role in hospitals' likelihood of vertically integrating. Shah, Fennell, and Mor (2001) examined the organizational, market, and community determinants of vertical integration into long-term care (inpatient long-term health and home health) and found that hospitals in urban and rural settings adopted different strategic responses to the level of long-term care competition. Wang, Wan, Clement, and Begun (2001) examined vertical integration into SNFs, home health agencies, and IRFs as part of a managed care adoption strategy. They found that SAC integration is associated with greater inpatient admissions (a measure of productivity) and negatively associated with financial performance. This study also found that larger hospital and not-for-profit hospitals were more likely to vertically integrate into SNFs, home health and IRFs. Rahman, Zinn, and Mor (2013) examined the impact of closing vertically integrated, hospital-based SNFs on readmissions rates and found that compared to freestanding facilities, hospital-based SNFs were associated with fewer readmissions. They also suggest that hospital-based SNFs are better able to handle more complex SAC patients.

Upon reviewing the literature, it is evident that hospital vertical integration into SAC is dependent on many external environmental factors and internal organizational factors. In light of the small body of empirical research examining the role of vertical

integration into SAC, researchers have predicted that hospitals will pursue vertical integration strategies into this sector for over 20 years (Giardina, Fottler, Shewchuk, & Hill, 1990; Mor & Bresdine, 2011; Shay & Mick, 2013;).

Research has not yet addressed hospitals' strategic responses to the changing ACA and how such responses impact organizational performance and patient outcomes. While the studies previously mentioned have examined components of this dissertation topic, the studies are either outdated (Shah, et al., 2001; Wang, et al., 2001; Wheeler, et al., year?) or do not examine the entire research question (Rahman, et al., 2013). Given the changes introduced by the ACA, there is a need to re-examine this topic using more current data. In addition, our understanding of how hospital vertical integration into SAC impacts organizational performance and quality outcomes is limited. To our knowledge, no study has examined hospital vertical integration into SAC in light of the payment changes brought on by the ACA. Given that organizations pursue different strategies based on their environment and available resources, it is important to examine vertical integration strategy in the area of SAC. This topic is important to policymakers and practitioners as it may explore and explain the relationship between public policy, hospital strategy, and organizational performance. It is critical to explore and understand whether organizational strategies lend themselves better to curbing medical spending, reducing fragmentation, and addressing the widespread quality gaps within the U.S. health system.

## Overview of Dissertation

The purpose of this dissertation study is to examine the antecedents and outcomes of hospital vertical integration into SAC. This dissertation consists of three papers that

report on the quantitative and qualitative phases of a sequential quan→qual mixed methods design study (Tashakkori & Teddlie, 2010). Sequential quan→qual mixed methods design is a research design where quantitative data is collected first and then these results are explained through the qualitative study phase. In the first phase of the study, panel data from the American Hospital Association's Annual Survey (AHA), the Rural Urban Commuting Codes (RUCA), the Center for Medicare and Medicaid Services Cost Report (CMS) and the Area Resource File (ARF) are analyzed to test two relationships; 1) the relationship between market and organizational factors and hospital vertical integration into SAC, and 2) the relationship between hospital vertical integration into SAC and organizational performance. The second, qualitative phase was conducted to further explore and explain the market and organizational factors are associated with hospital vertical integration into SAC. The first phase is connected to the second phase during the intermediate stage when the results of the qualitative phase guide the sampling and interview protocol used during the second, qualitative phase. During the qualitative phase we utilized a multiple case study research design and explored three health systems throughout the United States. Chapter 2, 3 and 4 are organized as papers that report on the theory, methods and results of different phases of the study. Findings from the quantitative phase of the study are reported in Chapter 2 and Chapter 3. Chapter 4 reports on the qualitative phase of the study. Chapter 5 provides a discussion of the overall findings of chapters 2, 3, and 4.

The dissertation study asks the following research questions:

*Overall Research Question of Study*

How do hospitals adopt a sub-acute care vertical integration strategy?

*Phase 1 Quantitative Research Question*

Quantitative 1: What organizational and market factors are associated with vertical integration into sub-acute care lines?

Quantitative 2: Is hospital vertical integration into sub-acute care services associated with better hospital financial performance and/or quality outcomes.

*Phase 2 Qualitative research questions*:

Why and in what ways do hospitals adopt a sub-acute care vertical integration strategy?

Chapter 2 addresses the first quantitative research question of Phase I of the mixed methods study. It examines which organizational and market characteristics are associated with vertical integration into SAC using a logit regression model. Chapter 3 addresses the second qualitative research question of Phase I. It explores the relationship between hospital vertical integration into SAC and financial and quality performance. Chapter 4 addresses the qualitative research question of Phase II. It uses the qualitative findings to describe the antecedents and outcomes of vertical integration into SAC through a multiple case study design.

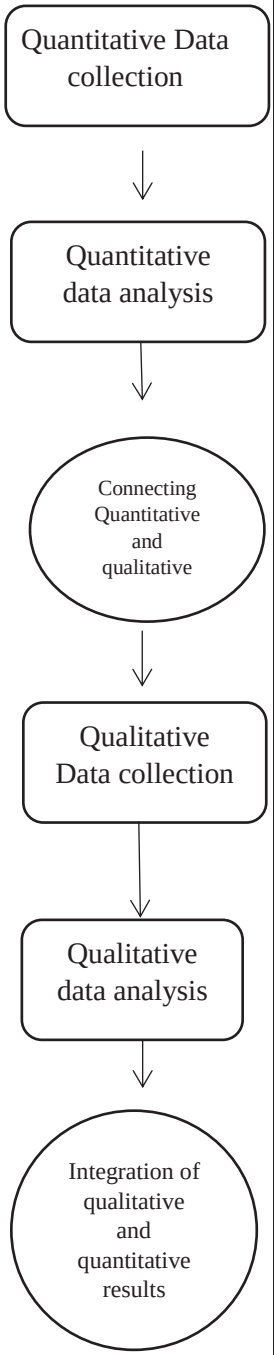
Chapter 2 utilizes resource dependence theory to examine the relationship between market and organizational characteristics and vertical integration into SAC. Using data from the American Hospital Association's Annual Survey (AHA), the Rural Urban Commuting Codes (RUCA), the Center for Medicare and Medicaid Services Cost

Report (CMS) and the Area Resource File (ARF), we examined the relationship between market dynamism, complexity, munificence, and hospital resources and the likelihood that a hospital will be vertically integrated into SAC between the years 2008-2012. Rural hospitals and the percent of population eligible for Medicare were associated with the likelihood that a hospital would be vertically integrated into SAC. Hospitals with swing beds were more likely to be vertically integrated into SAC. Investor owned and system affiliated hospitals were less likely to be vertically integrated into SAC. Our findings provide valuable insight into the types of markets and organizations we are likely to see being vertically integrated into SAC. The findings of this study may be used by policy makers to explain the variation in strategic responses to the ACA and how hospitals manage their environment under current public policy initiatives.

Chapter 3 utilizes transaction cost economics to explore the relationship between vertical integration into SAC and hospital financial and quality performance. Using a fixed effects model, we examined the relationship between hospital vertical integration into SAC and financial and operating performance. Vertical integration into SAC was associated with an improvement in 30-day readmissions for pneumonia patients. There were no statistically significant results when we examined the relationship between vertical integration and operating margin and 30-day heart failure readmissions. This paper may help policymakers and healthcare managers better understand vertical integration strategies and how this strategy impacts organizational performance. It provides insight into whether or not organizations can provide seamless care between acute care and SAC and experience positive financial performance.

Chapter 4 describes why certain organizations are more likely to vertically integrate and why vertically integrated hospitals experience certain organizational outcome. Utilizing cross case analysis, this study attempts to explain the outcomes found in chapter's 2 and 3 from the perspective of three health systems. Using the results from chapter 2 and 3, Health systems were purposefully selected. We used instrumental case design to address out research questions and explore hospital vertical integration strategy (Stake, 1995). We found that organizations' decision to vertically integrate into SAC is based on a variety of market and organizational factors. It is also a response to the changing value-based payment incentives. Policymakers and healthcare managers may benefit from this study by gaining a more comprehensive understanding of the strategic decision-making vertical integration into SAC.

In conclusion, this dissertation resulted in three papers of publishable quality that address hospital vertical integration into SAC. This dissertation adds to the understanding of hospital strategy and provides insight into how hospitals are responding to the ACA. In addition, it also adds to the literature because, to date, there have been no studies that have addressed the topic of hospital vertical integration into SAC utilizing a mixed methods approach. Figure 1 provides an overview of the mixed methods research process and how the components of this process are reported in the three papers, and how these papers are linked. The diagram portrays the sequence of research activities, identifying the procedures, products and papers associated with each stage of the study. It also identifies the connecting points between the quantitative and qualitative phases and where the mixing occurs.




| | Procedure | Product | Paper/Chapter |
|---|---|---|---|
| Quantitative Data collection | Cross sectional time series data from AHA, MCR, ARF, RUCA & Hospital Compare (2008-2012) | Merged data set | |
| Quantitative data analysis | Data Screening<br>Univariate and multivariate results<br><br>Time and hospital level fixed effects | Missing data, normality, Descriptive statistics<br><br>Significance and coefficients | Papers 1 & 2 |
| Connecting Quantitative and qualitative | Selection of 3 health systems for case studies<br>Develop interview questions and qualitative analysis plan | 3 cases (health systems)<br><br>Protocol for case study data collection:<br>In-depth, semi-structured interviews | |
| Qualitative Data collection | In-depth interviews with three health systems<br>Solicit strategic materials<br>Review documents<br>Follow up emails<br>Researchers reflections | NVivo 10 Database | |
| Qualitative data analysis | Within-case study analysis<br>Cross-case study analysis | Data verification process<br>Development of themes | Paper 3 |
| Integration of qualitative and quantitative results | Interpretation and explanation of integrated qualitative and quantitative results | Discussion<br>Implications for healthcare managers<br>Implications for policy makers<br>Future research | Discussion |

*Figure 1, Overview of Research Process*

Adapted from Ivankova, et al., 2006

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CHAPTER 2

# MARKET AND ORGANIZATIONAL FACTORS ASSOCIATED WITH HOSPITAL VERTICAL INTEGRATION INTO SUB-ACUTE CARE

by

C. TORY H. HOGAN, CHRISTY HARRIS LEMAK, LARRY HEARLD, NATALIYA IVANKOVA, NIR MENACHEMI, BISAKHA SEN, JACK WHEELER

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## Introduction

The Affordable Care Act (ACA) addresses unnecessary healthcare spending and gaps in quality that plagues the U.S. healthcare system. The ACA addresses these issues through new reimbursement initiatives that aim to incentivize more efficient care across a continuum of providers (Goldsmith, 2011). Consistent with these incentives, payers are moving away from fee-for-service reimbursement structures and toward capitated payment (Shay & Mick, 2013). Many industry experts predict that healthcare providers will consolidate in response to these environmental changes (Berenson, Ginsburg, Christianson, & Yee, 2012; Goldsmith, 2011; Zigmond, 2010).

The aging population, new payment methods, and the introduction of Accountable Care Organizations (ACOs) make sub-acute care a potentially attractive market for hospitals (Shay & Mick, 2013). In this context, hospitals have an incentive to buy or partner with sub-acute care (SAC) providers in order to gain control of revenue sources that exist across the continuum of care and to establish more diversified sources of revenue.

Vertical integration in healthcare is defined as "the provision of a continuum of office-based primary care, acute care, and post-acute care services within a single organizational or joint ownership structure, allowing for a coordinated progression of services across the patient care spectrum" (Shay & Mick, 2013, p. 16). Hospitals that vertically integrate SAC will do so by bringing inpatient rehabilitation facilities and skilled nursing facilities under their governance structure. By vertically integrating these

services, hospitals have the potential to gain a competitive advantage by controlling the full continuum of patient care and reducing administrative costs associated with discharging patients to SAC.

Researchers have examined vertical integration in a variety of healthcare settings as a predictor of financial and organizational performance (D'aveni & Ravenscraft, 1994; Forbes & Lederman, 2010; Rothaermel, Hitt, & Jobe, 2006). In spite of the potential benefits of vertically integrating these services, not all hospitals are adopting a vertical integration SAC strategy. Little is known about factors which may facilitate or impede such efforts. This study seeks to add to the vertical integration literature by examining the organizational and market factors that are associated with vertically integrating SAC strategies.

Two previous studies examined hospital integration of SAC. Wheeler, Burkhardt, Alexander, and Magnus (1999) and Shah, Fennell, and Mor (2001) examined a multitude of financial, organizational, and market characteristics that determined what types of hospitals diversify into SAC. Both studies were completed using data sets prior to two major healthcare public policy changes, specifically the Balanced Budget Act of 1997 and Affordable Care Act of 2009.

The Balanced Budget Act of 1997 mandated the use of a prospective payment system for skilled nursing care and home health agencies. Prior to this legislation, skilled nursing facilities had been under a fee-for-service payment model. The ACA created incentives to expand the continuum of care beyond acute care facilities as part of the development of ACOs (Keckley & Hoffman, 2010; Rittenhouse, Shortell, & Fisher, 2009). ACOs are financially responsible for all care received by each member regardless

of location. In addition, the ACA enacted 30 day readmission penalties and bundled payments for specific diagnoses. Hospitals are now penalized if patients are readmitted unnecessarily within 30 days of being readmitted, regardless of which provider is responsible for the readmission.

Bundled payments mean that physicians, hospitals, and sub-acute care providers receive one payment for a specific DRG and providers have to work together to disperse the payment. Hospitals may be at the biggest risk for being shortchanged as a part of the new healthcare payment structures and run the risk of losing revenue. These two public policies have caused major disruption and change in today's healthcare system, further supporting the need to revisit the concept of vertical integration into SAC.

The purpose of this study is to investigate the relationships between organizational and market factors and hospital vertical integration into SAC services. Using a longitudinal database, we examine the relationship between market dynamism, complexity, munificence, and hospital resources and the likelihood that a hospital will be vertically integrated into SAC between the years 2008-2012. The results of this study will contribute to the knowledge of how healthcare market and organizational factors influence hospital strategy, specifically vertical integration behavior. Furthermore, this paper will inform public policy makers about how hospitals are responding to new payment reforms and could advise hospital and health system leaders on potential future SAC strategies.

## Background

The SAC industry provides a broad range of services to patients as part of an acute care episode. SAC has seen significant growth over the last 30 years and represents a major part of healthcare spending (Yip, Wilber, & Myrtle, 2002). In 2010, $143 billion was spent on nursing facilities (cms.gov). Medicaid and Medicare beneficiaries are the largest groups of SAC utilizers. The role of SAC is to aid in the recovery and rehabilitation of patients when they are no longer eligible for acute care services but still require 24-hour care (McDowell, 1990). Facilities included in the term SAC are inpatient rehabilitation facilities (IRF) and skilled nursing facilities (SNF).

Patients admitted to these facilities have complex care needs for services such as rehabilitation, supportive care, and palliative care management (Mor, Intrator, Feng, & Grabowski, 2010). The federal government has focused its efforts towards curbing SAC spending. Utilization among Medicare beneficiaries increased at an average rate of 25% between 1988 and 1997 (Medicare Payment Advisory Commission, 2004). This significant growth was a result of the shift from Medicare hospital payment policy to prospective payment (Morrissey, Sloan, & Valvona, 1988; Neu, Harrison, & Heilbrunn, 1989). Consequently, patients were being discharged earlier from acute care centers, and SAC became the place where patients received less intensive, but still costly nursing and rehabilitation services.

The Balanced Budget Act of 1997 introduced the prospective payment structure to SAC services, which was fully implemented in 1999. Since then, the SAC sector has been described as fragmented; a place where patients are passed around through various provider types, often with providers who do not communicate effectively with one

another (Buntin, Garten, Paddock, Saliba, Totten, & Escarce, 2005). This fragmentation may be due to margin-seeking behavior which occurs as a result of the prospective payment system (Weech-Maldonado, Neff, & Mor, 2002). SAC providers may be eliminating all expenses associated with services that do not directly contribute to the bottom line.

Since providers receive a fixed payment for each patient, they may not be able to financially afford to keep patients for the time necessary to provide needed care, or provide transitional services that may aid in recovery. Therefore, conflict may exist between the organizational and financial goals of a SAC center and patient needs. In addition to cutting costs associated with patient care, the prospective payment system also provided an incentive for organizations to over-provide services to less severe patients and under-provide or avoid providing services to more severe patients (Ellis, 1998). Overall, this sector of the U.S. health system has been described as inefficient and expensive (Buntin et al., 2009).

One of the biggest quality issues associated with SAC services is hospital readmissions. One-quarter of all Medicare beneficiaries who utilize SAC are readmitted to a hospital (Mor et al., 2010). Hospital readmissions can indicate problems with the quality of care (Goldfield et al., 2008). Additionally, improved transitions in care represent an area that can potentially result in significant cost savings (Averill, Goldfield, Vertrees, McCullough, Fuller, & Eisenhandler, 2010). Improved transitions of care which support care coordination, communication across providers, and continuity have been associated with reductions in hospital readmissions (Coleman, Parry, Chalmers, & Min, 2006).

The ACA established bundled payments, pay for performance, and ACOs in an effort to incentivize providers to manage patient transitions in care so that unnecessary utilization of health services could be avoided and quality enhanced. The bundled payment program provides a single payment to multiple providers for an episode of care. Pay for performance programs reward providers with high quality outcomes and penalize providers for poor quality outcomes.

The Hospital Readmissions Reduction Program (HRRP) is a pay for performance program that most directly addresses SAC patients. As part of the HRRP policy, the Center for Medicare and Medicaid (CMS) reduce payments to hospitals with excess readmissions for patients with Acute Myocardial Infarction, Heart Failure, and Pneumonia. Finally, ACOs are entities in which a group of providers (i.e., hospitals, physicians, and surgical centers) agree to be responsible for the overall cost and quality for a defined population of patients. As part of the ACO, reimbursement is linked to quality outcomes.

Policymakers envision that these payment reforms will provide an incentive for healthcare providers to more effectively care for patients as they transition through the continuum of care. Patients moving to SAC providers upon completion of acute care stays represent a significant component of the delivery system that hospitals are now focusing on due to the changes in payment models described. Hospitals are at risk of losing revenue as a direct result of the care provided to their patients by SAC.

## Theoretical Considerations and Hypotheses

Resource Dependence Theory (RDT) is one of the most widely used theories in explaining vertical integration (Hillman, Withers, & Collins, 2009). This paper focuses

on the concept of vertical integration as a strategy that hospitals adopt to better manage their organization and environment. Vertical integration is a means for achieving a competitive advantage; it has been examined in the management and economics literature as an important strategic initiative (Perry, 1989). RDT argues that firms make decisions based on a culmination of external organizational factors and resources (Campling & Michelson, 1998).

RDT encompasses three environmental constructs: munificence, dynamism, and complexity. Pfeffer and Salancik (1978) define munificence as the availability of necessary resources in a firm's particular environment. The availability of resources can change over time from scarce to abundant, and RDT predicts that successful organizations will take advantage of resource munificence.

Keiser and Marino (2002) define dynamism and complexity as relating to the level of uncertainty in an organization's market. Dynamic environments are constantly changing which cause an organization to be uncertain as it makes decisions (Yeagar, Menachemi, Savage, Ginter, Sen, & Beitsch, 2014). Complexity refers to the amount of heterogeneity or diversity in a firm's environment which also creates uncertainty for decision makers. RDT suggests that munificence, dynamism, and complexity influence the strategy a firm will adopt. Firms respond to these three components of their environment through strategic behaviors.

One strategy firms may adopt in response to their environment is vertical integration. Vertical integration is defined as collaboration in order to achieve efficiency and environmental adaptation (Meyer, 1982). Vertical integration refers to business arrangements that are used to control the raw materials, services, and outputs of a firm

(Harrigan, 1984). In the context of this research, hospitals may vertically integrate in response to changes in their environment, such as the BBA and the ACA. Specifically, the ACA established bundled payments, pay for performance, and ACOs in an effort to incentivize providers to manage patient transitions in care so unnecessary utilization of health services could be avoided. The level of munificence, dynamism, complexity, and resources may impact how an organization is able to respond to these changes.

RDT provides a framework for understanding hospitals as it pertains to SAC vertical integration. This theory has been used to understand a wide array of organizational strategies in the healthcare industry including vertical integration strategies (David & Cobb, 2010). Healthcare organizations seek to diversify to gain a competitive advantage (Pfeffer & Salancik, 2003). If hospitals are to fully employ vertical integration, the hospital's environment and organizational characteristics must be evaluated (Davis & Cobb, 2010).

Upon taking these factors into consideration, hospitals can employ strategies that enable them to most effectively achieve a competitive advantage by acquiring the necessary resources resulting in a vertically integrated system. Vertically integrated systems can come in many organizational forms, which vary in the type of ownership (and subsequent risk). For example, a hospital can choose to own a SAC facility. Alternatively, the healthcare system that owns the hospital can own a SAC facility as well. Organizations may participate in a joint venture or they can be a part of a network. Organizational forms are on a spectrum (see Figure 1: Spectrum of Vertical Integration Strategies) which relates to the associated risk and level of control and ownership.

Vertical integration within the *hospital* defines a relationship in which a hospital fully owns a SAC facility. Of all the types of vertical integration strategies, this type exposes the organization to the most risk, while giving the hospital complete control and all revenues. Vertical integration within a *system* refers to a relationship in which the health system that the hospital is a part of owns a SAC facility. The hospital has some risk associated with this organizational design because the hospital and SAC facility are part of the same entity and share in common organizational goals. The hospital has some control over the entity through membership in the system.

A *joint venture* is an agreement between two parties to create a new business entity and both parties share in the financial management and ownership. Hospitals can vertically integrate into a SAC facility through a joint venture with another organization, thereby sharing risk and control. Finally, hospitals can vertically integrate through a *network*. Vertical integration into SAC through a network is an arrangement in which hospitals partner with SAC facilities to work together and coordinate care through contracts between the two organizations. The hospital does not own any part of the SAC facility and therefore has less risk associated with the agreement.

Each vertical integration strategy results in a different type of organizational structure, and therefore, different processes and outcomes for patients as they move from acute, inpatient care to sub-acute care and beyond. Within the strategic management literature, each of these strategies is identified as unique, being influenced by distinctive factors in the organizational environment and based on available resources available.

For the purpose of this paper, we focus on "within hospital vertical integration." This decision represents a vertical integration strategy is associated with the highest level

of risk and control when compared to other potential vertical integration strategies. In the context of this investigation, hospitals that vertically integrated were making a strategic decision to own the SAC provider, gaining complete control of this part of the care continuum. RDT explains that the level of munificence, dynamism, and complexity will impact if a hospital decides to vertically integrate at the hospital level. These strategic decisions are made based on the resources available in an organization's environment and within the organizations itself. We formulate hypotheses that predict a hospital's vertical integration into sub-acute care were associated with the level of dynamism, complexity, munificence, and organizational resources.

Dynamism in the environment is directly associated with the degree to which a firm chooses to diversify (Harrigan, 1985). Dynamism refers to the degree of change in a hospital's environment. When a hospital's environment is changing, hospitals face information uncertainty and struggle to predict the future. When hospitals face uncertainty in their environments, there is a greater incentive to employ structure-changing strategies (Lillie-Blanton, Felt, Redmon, Renn, Machlin, & Wennar, 1991). RDT supports the notion that hospitals will respond to this uncertainty by attempting to gain control in their market and gain market share (Greenberg & Goldberg, 2002).

Vertical integration is a strategy that hospitals employ in order to gain control (Peters, 1994; Shortell, 1989). This control allows them to better manage their competitive environment. Of all vertical integration strategies, vertically integrating at the hospital level facilitates the greatest degree of control over this part of the patient care continuum. Therefore, the first hypothesis is proposed:

> *Hypothesis 1: Higher levels of dynamism will be positively associated with hospital vertical integration into SAC.*

The amount of complexity in an organization's environment may be associated with vertical integration (Harrigan, 1985). Complexity is a construct that describes the level of intricacies in a hospital's environment. Competition, regulation, and community characteristics create situations in the external environment that make it difficult to predict the future. When a hospital's environment becomes more complex, the future is not as easy to predict. When an organization faces uncertainty in the future, it executes strategies that enable it to manage this uncertainty.

Vertical integration strategies may enable organizations to control cost and quality as patients move between acute care and SAC. The control gained as a result of adopting this strategy allows hospitals managers to better control processes that are critical to their ability to predict the organization's future. Therefore, the second hypothesis is proposed:

*Hypothesis 2: Higher levels of market complexity will be positively associated with hospital vertical integration into SAC.*

The level of munificence in an organization's environment may impact an organization's strategy and response to its environment. Munificence refers to the availability of resources necessary for an organization to be successful. Munificence may impact a hospital's ability to acquire and manage the resources necessary and vital to its revenue stream and associated with the services it is providing. Specifically, the availability of SAC services in a community may impact the ability of a hospital to move patients from acute care to SAC.

For example, if the community only has a limited number of SAC facilities, hospitals may find it difficult to secure beds in these facilities or ensure that the patient

can move to a SAC bed in a timely manner. As a result, a hospital may adopt strategies to ensure that it has access to SAC resources and gain control of these processes. Research has shown that when resources that are vital to a firm's success become scarce, competition in markets increases (Dess & Beard, 1984, Porter, 1980). This competition then causes organizational changes and adoption of new strategies (Koberg, 1987; March & Simon, 1958). Therefore, the following hypothesis is proposed:

*Hypothesis 3: Higher levels of munificence will be negatively associated with hospital vertical integration into SAC*

An organization's ability to respond to its environment is driven by the availability of resources. Organizations with greater availability of resources are able to respond more effectively to changing environmental threats that create uncertainties. Vertical integration reduces future uncertainties by bringing control of cash flows into the organization. Organizational resources may be important factors in strategic adoption. An organization's existing resources may restrain how an organization is able to respond to the pressures brought on by the environment.

For example, larger hospitals or hospitals that are part of a system may have greater internal resources (e.g., administrative staff, clinicians) and therefore may be able to more easily shift/utilize internal resources to accommodate the demands of the environment (Banaszak-Holl, Zinn, Mor, 1996). Therefore, hypothesis four is proposed

*Hypothesis 4: Greater organizational resources will be positively associated with vertical integration into SAC.*

## Methods

### *Data*

For this research, the American Hospital Association's (AHA) Annual Survey of Hospitals was linked with the Area Resource File (ARF), the Center for Medicare and Medicaid's (CMS) Cost Report, and the Rural Urban Commuting Area (RUCA) data to establish a data set for 2008-2012. A summary can be found in Table 1.

In Step 1, 33,865 hospitals were identified between 2008 and 2012. In Step 2, all hospitals that were in U.S. territories (e.g., Guam) were eliminated because these territories are located in unique environments. Hospitals located in these areas respond to unique environmental factors and therefore could not be generalized with U.S. states. In Step 3, all hospitals that were not classified as "General and Surgical" hospitals were eliminated. The eliminated hospitals included specialty hospitals that have unique patient populations with specialized care needs (e.g., hospitals classified as "Alcoholism and other chemical dependency").

These specialized care needs created organizational goals and strategies that could not be generalized. In Step 4, hospitals owned by the federal government were eliminated (i.e., hospitals managed by the Department of Veteran's Affairs, Army, Navy, Airforce, Department of Justice, Indian Services). The populations served in these organizations created unique patient needs and services associated with these patient populations and could not be generalized. Finally, in Step 5, hospitals that could not be identified in all databases were eliminated for having insufficient information. As a result of this process a sample of 17,665 hospitals was identified.

### *Dependent Variable*

The dependent variable is "vertical integration into SAC." To operationalize this variable we reviewed the AHA Annual Survey results from 2008-2012 for all hospitals in the dataset. Data was compiled longitudinally and examined for hospital responses to whether or not they had a SNF at the hospital. We used this variable as an indicator of whether or not they had a vertically integrated skilled nursing facility. The variable was binary; one being vertically integrated and 0 being not vertically integrated in a given year. A summary/frequency of the number of organizations in this variable can be found in Table 2.

### *Independent Variables*

To measure our constructs (munificence, dynamism, complexity, and organizational resources), we used variables from the AHA Annual Hospital Survey, the ARF, CMS Cost Report, and RUCA codes.

**Munificence**. Munificence was operationalized using two measures: The percent of population eligible for Medicare in the hospital's county and urban/rural location (Menachemi et al., 2011; Yeager et al., 2013). Many Medicare beneficiaries live on fixed incomes which may be supplemented by retirement savings. This puts a constraint on the amount of resources available for this po pulation to consume (Kazley & Ozcan, 2007; Zinn et al., 1998). Rural and urban location measures the availability or resources in a community. Urban areas are frequently associated with greater availability of healthcare resources in a community (Tuvia, Pesis-Katz, & Mukamel, 2004).

**Dynamism**. Dynamism was operationalized using the change in the county federal poverty level between 2008 and 2012 (ARF). Change in the federal poverty level

was selected to measure dynamism because the federal poverty limit is a measure of families experiencing poverty in a county. Counties with an increase in the federal poverty level are more resource-scarce. Individuals experiencing poverty may be less able to consume healthcare and utilize a SNF.

**Complexity**. Complexity was operationalized using two measures: the Herfindahl Hirshman Index (HHI) and SNF availability. Based on hospital admissions, the HHI is defined as the sum of squares of hospital admissions of a hospital as a percentage of total admissions within a county continuous (Hsieh, Clement, Bazzoli, 2010; Weech-Maldonado et al., 2009; Zinn et al., 1997). The HHI is a common measure of the market concentration, the size of a hospital in relation to its market, and the extent of market concentration and competition (Morrisey, Sloan, & Valvova, 1988).

Previous research suggests that higher levels of market competition and concentration create more complexity for the actors within a market because higher levels of competition create more factors to take into account when trying to predict the future (Dalmau-Atarrodona & Puig-Junoy, 1998). The decision to vertically integrate into a SNF is a strategic decision that organizations make in order to gain control over a part of the continuum of care and a strategic response to better predict the organization's future.

For the numerator, a hospital's market size was measured based on its admissions in a given year. The denominator was the 2008 county hospital admissions in a given year. The availability of SNF in a county was defined as the number of SNF in a county divided by the census population per on million people. This measure provided a representation of the complexity of the marketplace for sub-acute care services in a county.

**Organizational resources.** Organizational resources were measured by the following four variables: (1) hospital size, defined as the number of hospital beds. This was a continuous variable. Previous research suggests that larger organizations are have more resources available to them and therefore may be able to adopt strategies more easily (Kimberly, Evanisko, 1981; Goes & Park, 1997); (2) Financial performance, which was defined as Operating Margin and is a continuous variable. Operating Margin is a financial measure which reflects the proportion of a hospital's revenue that remains once all wages, overhead, and materials costs have been paid (CMS). Previous research suggests that organizations may be able to make strategic investments when they are performing well financially (Damanpour, 1991; Wang, Wan, Burke, Bazzoli, & Lin, 2005); (3) Ownership status, which is defined as 'not for profit', 'investor owned' or 'non-federal governmental' and dummy variables were created to represent each group. Ownership status was chosen to operationalize organizational resources because it can influence a hospital's access to capital to make strategic investments; and (4) Swing beds were operationalized to consider whether or not an organization was licensed to have swing beds. Swing beds reference beds that CMS has allowed an organization to use as an acute care bed and later a skilled nursing bed as patients moves between types of care. Swing beds could be considered a substitute for vertically integrating into skilled nursing facilities.

To understand if organizations were more likely to vertically integrate *over time*, a dummy variable was included for time. A summary of all constructs can be seen in Table 3.

***Model***

Descriptive statistics for the independent variables, control variables, and dependent variables were analyzed to determine the variability of each, to test the assumptions of the regression model, and to test for outliers in the data. Descriptive statistics for all independent variables and dependent variables were analyzed to examine the variability of each variable. Using a panel of data (2008-2012), a logit regression model was used to assess the relationship between market and organizational factors and hospitals being vertically integrated into SAC. Standard errors were clustered by hospitals. All analysis was completed using STATA 13.0. Model specifications were as follows:

$$\text{Ln}\,\frac{y}{1-y} = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 +$$

$$b_6x_6 + b_7x_7 + b_8x_8 + b_9x_9 + b_{10}x_{10} + b_{11}x_{11} + b_{12}x_{12} + b_{13}x_{13}$$

$y$ = probability of being vertically integrated into skilled nursing facility

$x_1$ = Number of SNF in County (2008)/Census Population (2010)

$x_2$ = Herfindal-Hirschman Index (based on Hospital Admissions)

$x_3$ = Percent of Population Eligible for Medicare in County (2008)

$x_4$ = County Geographic Location (2010), Rural

$x_5$ = Change in Poverty Level in County, 2008-2012

$x_6$ = Swing Beds

$x_7$ = System Affiliation

$x_8$= Hospital Bed Size

$x_9$= Operating Margin

$x_{10}$= 2009

$x_{11}$= 2010

$x_{12}$ = 2011

$x_{13}$ = 2012

## Results

There were 17,665 hospitals in the sample. Within the sample, 50% of hospitals were located in urban areas (see Table 4). Sixty-two percent of hospitals are not for profit, 23% were non-federal, governmental, and 15% were investor-owned. Forty-five percent were associated with a health system and 37% had swing beds. On average, hospitals in the sample had 162 staffed beds, and the mean HHI was 74. Additionally, on average, 16% of county populations were eligible for Medicare.

A cross tabulation was conducted of hospitals that were vertically integrated into skilled nursing facilities over the period of the study (2008-2012). In 2008, 25.7% of hospitals in the sample had a vertically integrated skilled nursing facility at the hospital level (see Table 2). This number rose each year, to 26.0% in 2009, 26.8% in 2010, and 27.8% in 2011. By 2012, 29.5% of hospitals in the sample had a vertically integrated skilled nursing facility at the hospital level.

It was hypothesized that higher levels of dynamism would be positively associated with hospital vertical integration into SAC (H1). Findings did not support this hypothesis; the change in poverty level between 2008 and 2012 was not statistically

significant. Second, it was hypothesized that higher levels of market complexity would be positively associated with hospital vertical integration into SAC (H2). This hypothesis produced equivocal results. When using the number of SNF in a county as a ratio of the county population, findings did not support the hypothesis (marginal effects 1.29%, 95% Confidence Interval -8.7850, -5.7794).When using the HHI, findings while not statistically significant were in the direction predicted.

In hypothesis 3, it was hypothesized that higher levels of munificence would be negatively associated with hospital vertical integration into SAC. Our findings support our hypothesis. When operationalizing munificence as hospital location (urban/rural), rural areas were positively associated with being vertically integrated into SAC (marginal effects 7.59%, 95% confidence interval 0.2209, 0.6329), compared to urban areas. Second, a positive association was found between percent of population eligible for Medicare in a county and hospital vertical integration into SAC (marginal effects 1.41%, confidence interval .0588, 0.0997).

In hypothesis 4, it was hypothesized that greater organizational resources would be positively associated with vertical integration into sub-acute care. Once again, this hypothesis produced equivocal results. When operationalizing organizational resources as swing beds, the hypothesis was supported (marginal effects 9.52%, 95% confidence Interval 0.3564, 0.7153). While not statistically significant, operating margin was positively associated with hospital vertical integration into SAC. However, this hypothesis was not supported when organizational resources were operationalized as system affiliation (marginal effects=-3.67*, 95% confidence interval -0.3617, -0.0513) and investor-owned (compared to not for profit and non-federal governmental) (marginal

effects= -9.56%, 95% confidence interval -0.8203, -0.2559). While not statistically significant, bed size was negatively associated with hospital vertical integration into SAC.

Lastly, we tested the relationship between vertical integration and time to see if hospitals were vertically integrating more over time. As compared to 2008, 2009 was positively associated with hospital vertical integration in SAC (marginal effects= 0.83%, confidence interval 0.0081, 0.0858). As compared to 2008, 2010 was positively associated with hospital vertical integration in SAC (marginal effects= 2.13%, confidence interval 0.0783, 0.1620) and 2012 was also positively associated with hospital vertical integration in SAC (marginal effects= 3.28%, confidence interval (0.1146, 0.2548). A summary of all results can be found in Table 6.

## Discussion

The first key finding of the study was that hospital vertical integration into skilled nursing facilities was associated with the degree of environmental munificence. Both measures of munificence were statistically significant and associated with hospital vertical integration into SAC. Of these measures, policymakers should take note of the fact that hospitals in rural areas were more likely to be vertically integrated into SNFs compared to hospitals in urban areas. This finding is consistent with previous literature that has suggested that hospitals in rural areas respond differently to environmental pressures in comparison to urban hospitals (Mick, Morlock, Salkever, & de Lissovoy, 1993).

Rural hospitals also face scarcity in the availability of services, providers, and nurses (Davidson & Moscovice, 2003). The constrained environments of rural areas also

create unique patterns of hospital utilization, readmissions rates, and utilization of SAC services (Coburn, Bolda, & Keith, 2003; Coburn, Keith, & Bolda, 2002). Vertical integration into SAC could be classified as a strategy that would enable a rural hospital to contain cost and gain market share. The environments in which rural hospitals operate create constraints and make it to reap benefits from cost containment and market share strategies (Trinh & O'Connor, 2000).

The findings from this study contrast with those of previous literature which state that rural hospitals are less likely to integrate and merge with other healthcare organizations (Trinh & O'Connor, 2000). Rural hospitals have already been struggling to adapt to the current demands of healthcare delivery. For example, they are less likely to adopt an electronic medical record (DesRoches et al., 2013), less likely to adopt imaging technology innovations (Wilson, Ramamurthy, & Nystrom, 1999), and face significant barriers to creating and participating in an accountable care organization or other integrated delivery system (Ortiz, Bushy, Zhou, & Zhang, 2013).

In light of previous research findings that identify many of the difficulties rural hospitals face, the findings of this study suggest that rural hospitals are responding to the changes in the ACA through vertical integration. Findings in this study further suggest that rural hospitals are delivering SAC in a vertically integrated model at higher rates than urban hospitals that are constrained. Vertical integration may be a better fit for markets with fewer resources.

Vertical integration into SAC was also associated with the size of the Medicare eligible population in a community. Hospitals that are in counties in which the population has a greater percentage of Medicare eligible individuals are more likely to be vertically

integrated into SNFs. Communities with larger Medicare populations may be constrained due to the financial resources of Medicare beneficiaries.

Conversely, Medicare is the larger payer of SNF services; it can be assumed that Medicare payers have a demand for SNF services. While this was not hypothesized, this result suggests that when the demand for SNF services increases in a community, hospitals respond by vertically integrating these services. Vertical integration of SNF services may be one way that a hospital can distinguish itself among competitors to gain a competitive advantage. Hospitals in markets with a smaller percentage of Medicare eligible individuals may not see vertical integration as a viable strategy because the demand for the service is not as high, relative to other demands in the market.

The next significant finding is that investor-owned hospitals were less likely to be vertically integrated into SAC, compared to not for profit hospitals and non-federal, governmental hospitals. This finding is consistent with much of the healthcare management literature. Previous research found that investor owned hospitals were less likely to provide diversified services compared to not for profit hospitals (Shortell, Morrison, Hughes, Friedman, & Vitek, 1986). Previous literature also found that not for profit hospitals are also more likely to vertically integrate into SAC than investor owned hospitals (Wheeler et al., 1999).

Investor owned hospitals adopt strategies that will be profitable and return financial rewards to their investors. The findings from this study suggest that investor owned hospitals may perceive vertical integration into SAC as a strategy that will not be profitable. One way that investor owned hospitals make investments profitable is to drive down cost. These findings suggest that investor owned hospitals may not perceive

vertical integration into SAC as a cost saving strategy. Future research is needed to better understand why investor owned hospitals are less likely to adopt vertical integration into SAC strategies.

Next, hospitals with swing beds were more likely to be vertically integrated into skilled nursing facilities. The labor and institutional knowledge associated with providing SAC care is a unique set of skills that differ from acute care that hospitals provide. Organizations that have swing beds may have the workforce and institutional knowledge that makes a SAC facility a natural fit. Additionally, hospitals that had swing beds may be more likely to vertically integrate because they understand the challenges and dynamics associated with this part of the continuum.

Hospitals that are part of a healthcare system were less likely to vertically integrate. This study measured vertical integration at the hospital level. Based on how we defined vertical integration, it is possible that hospitals that are part of a system were vertically integrating at a health system level as compared to a hospital level. Further research is needed to understand the relationship between hospitals that are in a health system and vertical integration into SAC.

Lastly, between 2009 and 2012 hospitals became more vertically integrated into SAC as compared to 2008. Hospital vertical integration for this part of the care continuum could be the result of hospitals anticipating the ACA and moving toward value based purchasing. Further research is needed to understand why hospitals were more likely to vertically integrate over time and what this trend means for patient care.

Despite the valuable contributions of this research, the study has several limitations. First, we used data from the AHA Annual Hospital Survey. We therefore

relied on hospital accurately reporting their SAC strategy. In some years, responses to questions were inconsistent with previous survey results. Unfortunately, this was the only source for data related to vertical integration into SAC.

Additionally, we used data from the ARF, which was not available for every year of the study. This is mitigated by the fact that many of the measures from this source did not change within one to two years' time. Lastly, we used financial data from the CMS Cost Report and only hospitals that provide care to Medicare beneficiaries. This limitation may impact the generalizability of the findings, although it was mitigated by the fact that most hospitals in the United States accept Medicare.

## Conclusion

As hospitals continue to adapt to payment changes brought about by the ACA, it is important to understand how hospitals will integrate SAC. The continuum of care continues to move patients to SAC Services, and funding agencies are focusing efforts toward reducing payments to organizations that provide SAC services. The demand for better coordination of care between hospitals and SAC facilities will only grow as penalties for readmissions increase and bundled payments become larger. The ability of hospitals to adapt to the changing healthcare landscape through vertical integration is related to their market and organizational resources. As policymakers continue to implement different components of the ACA, it is critical that they are aware of how hospitals in less resource abundant environments respond.

Table 1

*Identifying the Study Sample, 2008-2012*

| Hospital Sample | | |
|---|---|---|
| Step 1 | AHA Hospital Survey Data 2008-2012 | 33,685 |
| Step 2 | Located in Associated Areas | -90 |
| Step 3 | Not classified as "general medical and surgical" hospitals | -7,150 |
| Step 4 | Federal Government Hospital | -975 |
| Step 5 | Insufficient Information | -7,815 |
| | Total | 17,665 |

Table 2

*Vertical Integration Adoption by Year*

| | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|
| Not VI | 2,630 | 2,667 | 2,600 | 2,550 | 2,426 |
| % | 74.3 | 74.0 | 73.2 | 72.2 | 70.5 |
| VI | 908 | 938 | 952 | 981 | 1,013 |
| % | 25.7 | 26.0 | 26.8 | 27.8 | 29.5 |
| Total | 3,538 | 3,605 | 3,552 | 3,531 | 3,439 |

*Table 3*

*Dependent Variables*

| Construct | Measurement | Operationalization | Source | Type |
|---|---|---|---|---|
| Complexity | Availability of skilled nursing facilities in marketplace | Availability of Skilled nursing facilities in the area. This is measured by taking the number of skilled nursing facilities in the area and dividing it by the census population for the area. | AHA | Rate |
| Complexity | Herfindahl index | Calculated by taking the hospital admissions reported in the AHA survey over the total admissions in an area (ARF) | ARF | Rate |
| Dynamism | % of population Eligible for Medicare | Percentage of the population eligible for Medicare. This variable is measured as a percentage of the 2010 census population | ARF | Percentage |
| Munificence | % of population Eligible for Medicaid | The percentage of the population eligible for Medicaid. This variable is measured as a percentage of the 2010 census population | ARF | Percentage |
| Resource | Does hospital have licensed swing beds | If a hospital has swing beds | AHA | 1= has licensed swing beds, 0=does not have licensed swing beds |
| Munificence | Geographic Location | We used categorization D which groups zip codes into Rural or Urban. | RUCA | 1=Rural, 0=Urban |
| Resource | System Affiliation | Respondents identify if they are a system member | AHA | 1=is a member of a system, 0 = is not a member of a system |
| Resource | Hospital Size | We used the total facility beds set up and staffed in a hospital. | AHA | Count of beds |
| Resource | Financial Performance | Measured using operating margin. Operating margin is calculated as (tot oper rev - tot oper exp) / tot oper rev * 100 | CMS | Percent |

| Construct | Measurement | Operationalization | Source | Type |
|---|---|---|---|---|
| Resource | Ownership Status | Using AHA data, respondents identify their organizational type, we are Non-federal governmental hospitals, investor owned hospitals and non-federal government hospitals as identified in the AHA data | AHA | 2 variables: Nonfederalgov: Variable 1 'Nonfederalgov'= Non-federal, government owned, 0 = Investor owned and Not for profit. Variable 2 'InvestorOwned': 1= Investor owned, 0= Non-federal, government and not for profit |
| | Year | Measurement Year | AHA | 4 dummy variables |

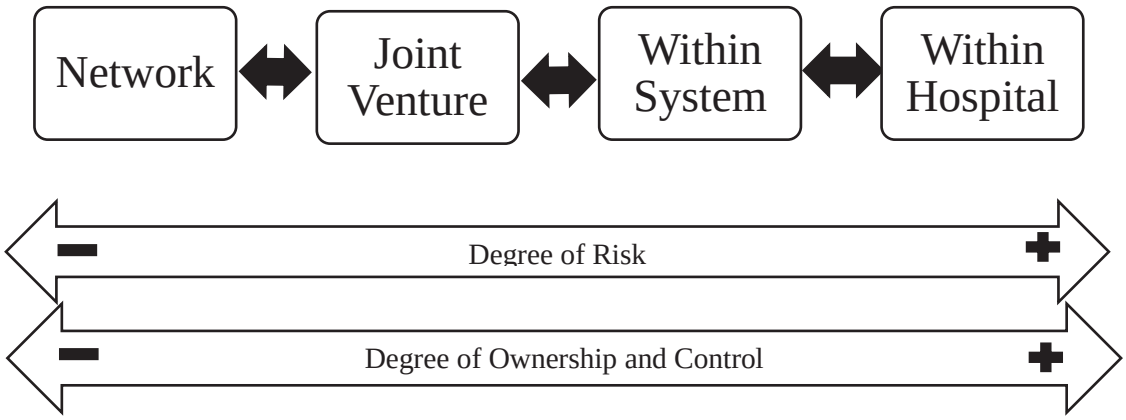


*Figure 1*: Spectrum of vertical integration.

Table 4
*Descriptive Statistics*

| Complexity | N or Mean (SD) |
|---|---|
| Number of SNF in County (2008)/Census Population (2010) | 6.202 (7.669) |
| Herfindahl-Hirschman Index (Hospital Admissions) (2008) | 67.644 (4215.789) |
| Munificence | |
| Percent of Population Eligible for Medicare in County (2008) | 16.345 (4.945) |
| County Geographic Location (2010), Rural | 9,995 |
| Dynamism | |
| Change in Poverty Level in County, 2007-2012 | 2.763% (3.133) |
| Organizational Resources | |
| Swing Beds | 6,318 |
| System Affiliation (2007) | 9,127 |
| Hospital Bed Size (2007) | 161 (186) |
| Operating Margin (2007) | -3.386% (17.311%) |
| Not for profit (2007) | 12,105 |
| Investor Owned (2007) | 3,539 |
| 2009 | 3,605 |
| 2010 | 3,552 |
| 2011 | 3,531 |
| 2011 | 3,439 |

Table 5
*Results*

| Complexity | Marginal Effects | 95% Confidence Interval |
|---|---|---|
| Number of SNF in County (2008)/Census Population (2010) | -1.294** | -8.785, -5.779 |
| Herfindahl Index (Hospital Admissions) | 0.01 | -0.000, 0.001 |
| Munificence | | |
| Percent of Population Eligible for Medicare in County (2008) | 1.41%** | 0.058, 0.099 |
| County Geographic Location (2010), Rural | 7.59%** | 0.221, 0.633 |
| Dynamism | | |
| Change in Poverty Level in County, 2007-2012 | -0.32% | -0.045, 0.00 |
| Organizational Resources | | |
| Swing Beds | 9.52%** | 0.356, 0.715 |
| System Affiliation | -3.67%* | -0.362, -0.051 |
| Hospital Bed Size | -0.001% | -0.001, 0.000 |
| Operating Margin | 0.04% | -0.001, 0.006 |
| Not for profit | 0.46% | -0.162, 0.214 |
| Investor Owned | -9.56%** | -0.820, -0.256 |
| 2009 | 0.83%** | 0.008, 0.086 |
| 2010 | 2.13%** | 0.078, 0.162 |
| 2011 | 1.33% | -0.017, 0.167 |
| 2012 | 3.28%** | 0.115, 0.255 |

* P <.05, ** P <.001

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CHAPTER 3

# THE RELATIONSHIP BETWEEN HOSPITAL VERTICAL INTEGRATION OF SUB-ACUTE CARE AND PERFORMANCE

by

C. TORY H. HOGAN, CHRISTY HARRIS LEMAK, LARRY HEARLD, NATALIYA IVANKOVA, NIR MENACHEMI, BISAKHA SEN, JACK WHEELER

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Format adapted for dissertation

## Introduction

The transition from acute care to sub-acute care (SAC) represents an area for potential quality improvement and cost savings (Cutler, 2010). During transitions in care, patients often receive confusing instructions regarding chronic disease self-management, conflicting medication plans, and inadequate follow-up care, resulting in unnecessary utilization of healthcare services and poor quality outcomes (Coleman, 2004; Forster, Murff, Peterson, Gandhi, Bates, 2003; Moore, Wisnivesky, Williams & McGinn, 2003). Theoretically, the argument has long been made that vertical integration, as an organizational structure, affects the outcomes of care delivered across the continuum and the ability to manage patients as they move between care settings. Yet research addressing the interaction between organizational structure, transitions in care between acute and sub-acute care, outcomes, and performance is non-existent. Value-based payment mechanisms introduced through the Affordable Care Act (ACA) link hospital revenues to patient quality outcomes that are impacted by SAC providers. Many industry experts have predicted that, in response to these environmental forces, health care organizations will consolidate, which will include vertically integrating into sub-acute care (Berenson, Ginsburg, Christianson, & Yee, 2012; Goldsmith, 2011; Shay & Mick, 2013; Zigmond, 2010). Vertically integration in response to these payment reforms could enable hospitals to gain control over patient management programs needed to reduce the adverse events associated with transitions in care between acute care and sub-acute care, resulting in better outcomes and performance. This paper examines the relationship

between hospital vertical integration into SAC and organizational performance. Through vertical integration of SAC, hospitals may be better able to manage patient transitions in care. In particular, they will have the ability to implement processes to reduce the likelihood that a patient will experience an adverse health outcome that may impact the ability to the hospital to collect its full reimbursement.

The research specifically addressing the intersection between hospital vertical integration and performance has tended to ignore this specific type of vertical integration. Rather, the literature on healthcare vertical integration has focused on hospital vertical integration into physician practices (Budetti, Shortell, Waters, Alexander, Burns, Gillies, & Zuckerman, 2002; Gorey, 1993), primary care physician vertical integration into specialty medical groups (Rittenhouse, Grumbach, O'Neil, Dower, & Bindman, 2004; Robinson, & Casalino, 1996) and vertical integration among hospitals, ambulatory care, and insurance providers (Brown, 1996; Morrisey, Alexander, Burns, & Johnson, 1999; Shortell, Gillies & Anderson, 1994). Little research has examined the impact of hospital vertical integration into SAC on hospital performance. In light of the ACA's payment incentives linking hospital reimbursements to patient quality outcomes associated with SAC patient experiences (i.e., readmissions for stroke patients), hospitals may vertically integrate as a way to protect their reimbursements. In anticipation of this strategic response to the current payment structures and the lack of research on this type of hospital vertical integration, it is important to examine the relationship between vertical integration and performance.

The purpose of this study is to examine the outcomes of hospitals that vertically integrate into SAC services. This paper will begin by providing a brief overview of the

SAC market, including the various environmental characteristics that may influence the degree to which hospitals integrate SAC services into their delivery of care. Using Transaction Cost Economics (TCE), hypotheses are proposed regarding the relationship between SAC integration and performance, followed by a discussion of the proposed data sets, sample, measures and an analytical approach used to test these hypotheses.

## Background

The SAC sector provides inpatient care to aid in the recovery and rehabilitation process of patients (Buntin, Colla & Escarce, 2009). This research limits the SACs examined to solely Skilled Nursing Facilities (SNF). SNFs provide short-term skilled care to patients recovering from an acute care episode and aid in the recovery and rehabilitation process of patients. This segment of the healthcare delivery system has seen significant growth in spending over the last 30 years (Yip, Wilber, & Myrtle, 2002). Medicare beneficiaries are the highest utilizers of SNFs, with twenty percent of all Medicare beneficiaries having transferred to a SNF in 2012 (Medpac, 2013). That year, it is estimated that Medicare spent 26.5 billion on SNF, up from 19.5 billion in 2008. Among patients transferred to a SNF facility, twenty-five percent are readmitted to the hospital within 30 days (Mor, Intrator, Feng, & Grabowski, 2010). Hospital readmissions are costly and create significant challenges for patients in SAC facilities. Unnecessary readmissions are blamed on a fragmented system, poor discharge planning, and poor communication across the continuum of care (Hansen, Bull, & Gross, 1998).

Before the ACA, the Balanced Budget Act of 1997 (BBA) dramatically altered the payment environment of the SAC industry. The BBA introduced a prospective payment structure to SAC services in an attempt to curb spending. The prospective payment

system (PPS) is a method of payment where diagnostic-related groups for inpatient stays are associated with payments that are fixed and predetermined (cms.gov). This created conflicting incentives for SAC provider organizations, as they had to balance their organizational financial goals with the ability to provide patients with high quality care (Grabowski, 2007). As a result of the PPS, the SAC industry began to exhibit margin-seeking behaviors in which they moved patients between care providers along the care continuum in an effort to seek and maintain the financial benefits paid by Medicare (Weech-Maldonado, Neff, & Mor, 2002). Under the PPS, a new prospective payment begins each time the patient is admitted to a new facility. As a result, the SAC provider would be able to collect multiple payments for patients each time they were admitted to their facility, regardless of whether the admission was associated with the same episode of care. So, for example, if a patient was at a SNF for recovery from a hip replacement, the SNF could collect a payment for the first initial stay of the patient. If the patient ended up being readmitted to a hospital for an overnight stay as a result of a complication with the hip replacement, a new prospective payment would begin upon the patient's re-admission to the SNF. As a result of the PPS, the SAC sector became a fragmented system where patients get passed back and forth from provider to provider within the continuum of care, with little coordination and with limited transitional services (Buntin, Garten, Paddock, Saliba, Totten, & Escarce, 2005).

Poor care transitions and coordination of care between providers may result in costly hospital readmissions. Readmissions from SAC facilities have proven to be costly and frequent, and, as a result, SAC providers have received significant attention for their role in hospital readmissions (Jencks, Williams & Coleman, 2009). In 1996, a quarter of

all Medicare beneficiaries discharged to a SAC facility were readmitted to a hospital within 30 days, costing an estimated $4.34 billion (Mor, et al., 2010). Between 2000 and 2006, the rate of readmissions from SNFs grew by 29 percent (Mor, et al., 2010). The transition from acute care to SAC represents an area for significant cost savings and quality improvement in the U.S. health system (Coleman & Berenson, 2004). Research shows that transitions in care that foster care coordination, communication across care settings, and continuity are associated with fewer readmissions (Coleman, Parry, Chalmers, Min, 2006). Concerned with the growing rate of unnecessary readmissions, the ACA established payment reforms to incentivize and change the approach to patient care for utilizers of SAC. Bundled payments, pay for performance programs, and ACOs make hospitals and SAC organizations jointly accountable, both financially and clinically, for patient outcomes (Mor & Besdine, 2011). Bundled payments provide a single payment for the care provided for a single diagnostic-related group (DRG) code, for both acute hospital care and SAC services. Pay for performance programs provide payment rewards for hospitals that provide high quality care and withhold reimbursements for hospitals that provide poor quality care.

The most significant pay for performance program to this research is the Hospital Readmission Reduction Program (HRRP) (Section §3025)(CMS, 2012). The HRRP directly addresses the issue of unnecessary readmissions. This policy states that CMS will reduce payments to hospitals with excess 30-day readmissions for Acute Myocardial Infarction (AMI), Heart Failure (HF) and Pneumonia (PN). This creates a financial incentive for hospitals to reduce readmissions in these areas. Better transitions to SAC settings and coordination of care between hospitals and SAC facilities will potentially

address excess 30 day readmissions. Lastly, ACOs are an entity in which a group of doctors, hospitals, and other providers agree to be responsible for the overall cost and quality of care for a patient population. Provider reimbursements are linked to performance measures and risk distributed to all providers in the ACO. These components of the ACA place a new emphasis on the relationship between hospitals and SAC and their ability to jointly work together to improve patient outcomes.

## Theory and Hypotheses

Studies examining the relationship between hospital vertical integration and financial performance are limited, and the findings are inconsistent (Holt, Clark, DelliFraine, & Brannon, 2011). Wang, Wan, Clement, and Begun (2001) found hospital vertical integration into SAC was negatively related to financial performance. Conversely, hospital vertical integration into physician practices is associated with improved financial performance (Wheeler, Wickizer, Shortell, 1986; Bray, Carter, Bobson, Watt & Shortell, 1994; Goes & Zhan, 1995). Management studies examining the relationship between vertical integration strategies and organizational performance have found conflicting outcomes. Within the context of vertical integration into SAC, research has also found that organizational characteristics influence SAC performance (Steffen & Nystrom, 1996). Compared to free-standing facilities, vertically integrated hospital-based skilled nursing facilities are better able to handle high acuity patients and are associated with fewer readmissions (Rahman, Zinn, & Mor, 2013).

The proposed study relies heavily on the underpinnings of the TCE theory to develop hypotheses. We examine hospital organizational performance primarily in two ways: hospital financial performance and patient quality outcomes. Transaction cost

economics (TCE) provides a theoretical framework to understand the relationship between vertical integration into SAC and performance. For a firm, there are transaction costs, which refer to the cost of acquiring a good or service through a marketplace, as compared to developing it within a firm (Williamson, 1981). The transaction cost is the cost of acquiring and managing personnel, equipment, and all other parts of the process. External transfers refer to the process of buying from a provider outside of the organization on a marketplace. Within the context of this research, transaction costs refer to the costs associated with managing relationships with SAC providers where patients transfer, the cost of transferring medical records to SAC facilities, any costs incurred while following up with patients discharged to a SAC facility, and any loss of reimbursements experienced as a result a poor quality care experienced at the SAC facility as a result of the ACAs value-based payment models.

TCE has been widely used to explain vertical integration across a wide array of social sciences (Macher & Richman, 2008). It also provides a theoretical framework to understand and explain vertical integration in the U.S. health care system. Within the context of healthcare, TCE has been the basis for understanding and explaining vertical integration within hospitals and health systems, especially within the context of coordinated delivery systems (i.e., Bazzoli, Shortell, Dubbs, Chan & Kralovec, 1999; Mick and Conrad, 1988). The theory explains that hospitals vertically integrate in an effort to gain economies of scale (Alexander & Morrisey 1988). Hospitals which belong to stronger, more closely knit systems may be able to reduce monitoring and coordination costs and provide services at lower cost (Bazzoli, Chan, Shortell, & D'Aunno, 2000).

According to TCE, hospital vertical integration into SAC will bring a reduction in costs associated with transitioning a patient to a SAC. Hospital ownership of SAC places both sets of providers under the same governance structure, and this single structure eliminates previous transactions between separate entities that may have contributed to costly readmissions and poor outcomes for patients who utilize SAC following an acute care episode. Cost savings is associated with the reduction in two forms of costs: (1) the costs associated with transitioning patients between acute care and SAC, and (2) the reduction in overhead and management costs reaped when two firms integrate under one governance structure. The complexity associated with transitioning patients to SAC could be better handled by the single organizational structure. Under one organization, SAC teams may be better integrated with acute care provider teams, making it easier to manage their patients and reducing unnecessary costs. Under a single organizational structure, vertically integrated hospitals will be better able to communicate with their SAC counterparts and enact processes to manage patients at risk for costly readmissions. The single organizational entity may also better align their organizational goals. In a non-vertically integrated SAC setting, providers may be incentivized to keep patients for as long as long as a payer will allow them to. This behavior is not necessarily beneficial to hospitals, as it reduces the reimbursement they would receive through a bundled payment. Aligning the SAC provider under a single, vertically integrated entity would align the financial goals of the organization and may help reduce practices that are inefficient or that reduce the profitability of a hospital. The reduction of transaction and management costs is expected to positively impact hospital financial performance.

Based on TCE theory, hospital vertical integration will reduce transaction costs associated with transitioning patients from acute care to SAC with less overhead costs. Therefore, the following is hypothesized:

*Hypothesis 1: Hospital vertical integration into SAC is positively associated with hospital financial performance.*

To fully understand the impact of hospital vertical integration strategy on performance, quality outcomes should be examined because such outcomes are directly associated with financial outcomes (Bazzoli, Chen, Zhao, & Lindrooth, 2008). We use 30 day readmission rates as a quality outcome because early readmissions have been associated with low quality inpatient care (Ashton, Del Junco, Souchek, & Mansyur, 1997), poor quality SAC (Mor, et al., 2010) and poor transitions in care (Coleman, et al., 2006). In addition, through value-based payment programs, there is a financial incentive to minimize poor care quality. Vertical and horizontal integration have also associated with consistency in processes, quality and products (Besunko, Dravone & Stanley, 1995). Hospital vertical integration into SAC puts both hospital and SAC providers under the same organizational structure, aligning organizational goals and incentives. Aligning of these goals may make it easier to put processes and programs in place that best take advantage of the new reimbursement programs. Vertically integrated providers are better able to manage, negotiate, and enforce agreements and invest in the systems needed to provide integrated care (Robinson & Casalino, 1996). Theoretically, vertical integration of SAC will enable hospitals to better share information during patient transitions, identify hand-off issues for complex patients, and provide organizational incentives for both providers to work more closely together. Through a single organizational structure,

SAC and hospitals may be better able to align their financial and quality goals. Therefore, it is hypothesized:

*Hypothesis 2: Hospital vertical integration into SAC is negatively associated with 30-day hospital readmissions.*

## Methodology

Using a longitudinal panel study design with hospital and year fixed effects, we examined the relationship between hospital vertical integration into SAC and hospital financial and quality performance. General acute care hospitals operating during the years of 2008-2011 were the focus of this study. We utilized data from the following data sources: (1) The American Hospital Association's (AHA) Annual Survey of Hospitals; (2) The Center for Medicare and Medicaid's (CMS) Medicare Cost Report; (3) CMS's Hospital Compare data containing hospital quality indicators; (4) The Area Resource File; and (5) The Rural Urban Commuting Area (RUCA) codes. All data sources covered will span 2008-2011, with the exception of the Area Resource File and the Rural Urban Commuting Area Codes which only contains 2010.

### Measures

An overview of all measures used in the model can be found in Table 1.

### Dependent Variable

Two dependent variables were examined: hospital financial performance (H1) and hospital readmissions (H2). Operating margin has been used in health services research as a financial performance measurement (Bazzoli, Chan, Shortell, & D'Aunno, 2000; Bazzoli, Chen, Zhao & Lindrooth, 2008; Levitz & Brooke, 1985; Molinari, Alexander, Morlock, & Lyles, 1995; Tennyson & Fottler, 2000; Wan, Ma, & Lin, 2001). Therefore,

we used data from the Medicare Cost Report to calculate the operating margin as: total operating revenue minus total operating expenses, divided by total operating revenue. This variable was operationalized as both one-year lagged operating margin and two-year lagged operating margin. For example, vertical integration in 2008 was used as a predictor of operating margin in 2009 and 2010. One-year and two-year lagged time frames are used to reflect the possibility that operational changes and subsequent financial rewards of integration into SAC may not be evident until years after the vertical integration has taken place.

The second dependent variable was hospital quality performance. Hospital quality outcomes were operationalized in two ways: (1) 30-day readmission rate for pneumonia patients and (2) Heart failure 30-day readmission rate. Pneumonia 30-day readmission rates and heart failure 30-day readmission rates were downloaded through Hospital Compare, a publicly available data set on the medicare.gov website. These readmissions rates were available for the entire period of the study. Both readmission rates are a 36-month average, with the periods beginning in July and ending 36 months later. For example, when examining hospital vertical integration in 2009, we used the 36 month readmission rate that began in July 2009 and ended in June 2012.

**Independent Variables**

*Vertical integration* was our primary independent variable. To operationalize vertical integration into SAC, we used the American Hospital Association's Annual Survey (AHA) results from 2008-2011. Within the survey, hospitals indicate if they are a skilled nursing facility at the hospital level. The variable is binary, with one being vertically integrated and zero being not vertically integrated in a given year. Next, we

included other independent variables during secondary analysis. *Hospital system membership* was included as an independent variable. Hospital system membership was examined because previous literature found that system membership is associated with improved organizational performance (Bazolli, Chan, Shortell, & D'Aunno, 2000; Clement, McCue, Luke, Bramble, Rossiter, Ozcan, & Pai, 1997). We used AHA data, which reports whether a hospital is part of a system or not. Hospital system membership was measured as a binary variable, with one representing the hospital being a member of a system and zero meaning they were not a member. *Hospital ownership* was included as an independent variable. Hospital ownership was examined because previous literature found a relationship between ownership status and hospital financial performance and patient outcomes (Eggleston, Shen, Lau, Schmid, & Chan, 2008; Shen, Eggleston, Lau, & Schmid, 2007; Tiemann & Schreyögg, 2012). This variable was measured as being investor-owned, not-for-profit, or non-federal governmental hospitals. Lastly, *hospital location* was included as an independent variable. We examined hospital location because previous literature revealed that rural hospital experience poor financial outcomes and patient quality outcomes (Keeler, Emmett, Rubenstein, Kahn, Draper, Harrison, McGinty, Rogers, & Brook, 1992; Williams, Hadley, and Pettengill, 1992). We utilized data points from the RUCA codes to establish whether a hospital was located in a rural or urban area. This variable was operationalized as either being rural or urban.

**Data Analysis**

Descriptive statistics for the independent and dependent variables were analyzed in order to determine the level of variability of each variable. Using STATA 13.0, we performed a multivariate analysis to determine the level of within hospital changes in

performance given the vertical integration into SAC status. Separate models were run for each dependent variable. Our primary model specification was as follows:

$$y_{it}=\beta_1 \chi_{it1}+\alpha_i+\mu_{it}$$

Where:

$y_{it}$ is the dependent variable (performance) where $i$ = hospital and $t$ = time

$\beta_1$ is the coefficient for hospital vertical integration into sub-acute care of the independent variable ($x_{it1}$)

$x_{it1}$ is hospital vertical integration into sub-acute care

$\alpha_i$ $(i=1.....n)$ is the unknown intercepts for a vector of hospitals

$u_{it}$ is the error term

As a secondary analysis, we tested whether hospital vertical integration into SAC was associated with improved organizational performance among types of organizations. We ran separate models that differentiated between the following organizational types: hospital location (rural and urban), hospital ownership type (investor-owned, not-for-profit and non-federal, governmental) and system membership. Specifically, to test the relationship between hospital vertical integration into SAC amongst hospital organizational types, we ran the same model as we did in the primary analysis but stratified the sample by each organizational type.

## Results

In our first model (hospital vertical integration into SAC and operating margin in a one-year lag), there were 3,815 unique hospitals representing 12,575 hospital-year observations. The mean one-year lag operating margin was -3.26%. The majority of hospitals in this set were not-for-profit (62%), followed by 23% non-federal,

governmental hospitals and 15% investor-owned. 50% of the sample was in rural areas. In our second model (hospital vertical integration into SAC and operating margin in a two-year lag), there were 3,862 unique hospitals representing 13,676 hospital-year observations. The mean two-year lag operating margin was -3.88%. The majority of hospitals were not-for-profit (62%), followed by 24% non-federal, governmental hospitals and 14% investor-owned. 51% of the sample was in rural areas. In model 3 (hospital vertical integration into SAC and 30-day heart failure readmission rates), there were 3,626 unique hospitals representing 11,328 hospital-year observations. The mean 30-day heart failure readmission rate was 21.99%. The majority of hospitals were not-for-profit (63%), followed by 21% non-federal, governmental hospitals and 16% investor-owned. 42% of the sample was in rural areas. In model 4 (hospital vertical integration into SAC and 30-day pneumonia readmission rates), there were 3,361 unique hospitals representing 12,007 hospital-year observations. The mean 30-day heart failure readmission rate was 17.81%. The majority of hospitals were not-for-profit (62%) followed by 22% non-federal, governmental hospitals and 15% investor-owned. 49% of the sample was in rural areas. A summary of these findings can be found in Table 2.

In hypothesis one, we hypothesized that hospital vertical integration would be positively associated with hospital financial performance. Our findings do not support this hypothesis when using either of the financial performance measures, operating margin with a one-year lag ($\beta$= -0.572, p=0.553) or operating margin with a two-year lag ($\beta$= 0.729, p=0.414). When testing whether or not hospital vertical integration was positively associated with hospital financial performance among certain organizational types, there were mixed results. Among rural hospitals, the hypothesis is not supported

for one –year lag operating margin (β= 0.6931, p = 0.571) or two-year lag operating margin (β= 1.271, p =0.276). Similarly, among urban hospitals, our findings do not support this hypothesis for one-year lag operating margin (β= 1.082, p=0.530) or two-year lag operating margin (β= 0.667, p=0.667). Among system owned hospitals, the hypothesis is not supported for one-year lag operating margin (β= 0.587, p=0.663) or two-year lag operating margin (β= 0.44, p=0.689). Among not-for-profit hospitals, the hypothesis is not supported for one-year lag operating margin (β= 0.648, p=0.570) or two-year lag operating margin (β=-0.786, p=0.430). Among nonfederal, governmental hospitals, the hypothesis is not supported for one-year lag operating margin (β= -0.503, p=0.823) or two-year lag operating margin (β=0.385, p=0.856). Among investor-owned hospitals, the hypothesis is not supported for one-year lag operating margin among investor-owned hospitals (β= 4.045, p=0.126). Among investor-owned hospitals, the hypothesis is supported for two-year lag operating margin (β= 5.99, p=0.027).

In hypothesis two, we hypothesized that hospital vertical integration would be negatively associated with 30-day readmission rates. In our primary models, we had mixed results. Our findings do not support this hypothesis when using 30-day heart failure readmission rates (β= 0.107, p=0.553). Our results support the hypothesis, however, when using 30-day pneumonia readmission rates (β= 0.232, p=0.039).

When testing whether or not hospital vertical integration would be negatively associated with 30-day readmission rates among certain organizational types, we had mixed results. Among rural hospitals, the hypothesis is not supported for 30-day heart failure readmission rates (β= 0.241, p = 0.454), but is supported for 30-day pneumonia readmissions (β= -0.318, p =0.012). Among urban hospitals, the hypothesis is not

supported for 30-day pneumonia readmissions (β= -.147, p =0.523), but is supported for 30-day heart failure readmissions (β= -0.575, p=0.107). Among system owned hospitals, the hypothesis is not supported for 30-day pneumonia readmissions (β= -0.249, p=0.178) or 30-day heart failure readmissions (β= 0.140, p=0.646). Among not-for-profit hospitals, the hypothesis is not supported for 30-day heart failure readmissions among (β= -0.131, p=0.640), but is supported for 30-day pneumonia readmissions (β=-0.417, p=0.004). Among non-federal, governmental hospitals, the hypothesis is not supported for 30-day pneumonia readmission rates (β= 0.383, p=0.404) or 30-day heart failure readmission rates (β=-0.167, p=0.441). Among investor-owned hospitals, the hypothesis is not supported for 30-day pneumonia readmission rates (β= 0.352, p=0.242) or 30-day heart failure readmission (β= 0.973, p=0.096).

A summary of these findings can be found in Table 3.

## Discussion

We found that, among all hospitals, vertical integration into SAC was associated with a reduction in 30-day pneumonia readmission rates. In 2011, there were approximately 88,800 30-day pneumonia readmissions among people over 65, estimated to cost $1.1 billion a year (Hines, Barrett, Jiang, & Steiner, 2014). This study suggests that when hospitals vertically integrate into SAC, they are better able to transition pneumonia patients to SAC and manage their health needs in a way that reduces the likelihood that patients will be readmitted within 30 days. Vertically integrated organizations, may be able to improve the intra-facility communication, better manage the care pathways and provide training to manage patients at risk of being re-admitted through follow up procedures and continuity of care as it relates to pneumonia patients.

Furthermore, we found that among rural hospitals, hospital vertical integration into SAC was associated with a reduction in 30-day pneumonia readmission rates. Rural hospitals face significant barriers to responding to the demands of the healthcare marketplace (DesRoches, Charles, Furukawa, Joshi, Kralovec, Mostashari, Worzala, & Jha, 2013; Ortiz, Bushy, Zhou, & Zhang, 2013). Previous literature has found that rural hospitals are less likely to merge and integrate with other healthcare organizations (Trinh & O'Connor, 2000). Our findings suggest that when rural hospitals are able to vertically integrate, they are able to positively impact pneumonia readmissions with hospitals in these locations. Rural hospitals are often smaller, have a limited work force, and have constrained financial resources (Succi, Lee, Alexander, 1997). Under these circumstances, a single unified ownership of this part of the care spectrum may better enable organizations to utilize limited resources and manage patients to avoid unnecessary readmissions. On the contrary, hospital vertical integration into SAC among urban hospitals was not significantly associated with an improvement in pneumonia readmissions rates. Further research is needed to better understand why hospitals located in rural areas are able to gain an improvement in 30-day readmissions when vertically integrating, yet the same benefits are not experienced by urban hospitals.

We also found that, among not-for-profit hospitals, vertical integration into SAC was associated with a reduction in the 30-day pneumonia readmission rates. Previous research examining the impact of hospital ownership on patient safety outcomes has found inconsistent results (Romano, Geppert, Davies, Miller, Elixhauser, & McDonald, 2003). The findings of our study suggest that not-for-profit hospitals are able to take advantage of being vertically integrated. This may be because not-for-profit hospitals

tend to make decisions with the community's needs in mind and may be constrained in how they use their capital. As a result, upon vertically integrating a SAC facility, not-for-profit hospitals may be more willing to make investments necessary to most effectively integrate the acute care transition teams with the SAC processes and structures. They may also be willing to invest in organizational processes that improve outcomes and may be more willing to make investments necessary to most effectively integrate the acute care transition teams with the SAC processes and structures. These investments could include training staff members on processes and patient safety, integrating electronic medical records systems between the acute care facility and the SAC facility, and creating a new set of policies and procedures for patients transferred between acute care and SAC. On the contrary, hospital vertical integration into SAC among investor-owned and non-federal governmental hospitals were not significantly associated with an improvement in pneumonia readmissions rates. Further research is needed to better understand why and how hospital ownership plays a role in improvement of 30-day readmissions when vertically integrating.

Lastly, we found that for-profit hospitals that vertically integrate saw an improvement in their operating margin two years afterwards. Investor-owned hospitals implement margin seeking strategies that may include cost cutting such as staffing reductions, centralization of purchasing, and reducing unnecessary procedures. For-profit hospitals may be better able to implement these strategies as they vertically integrate SAC into their care continuum. Meanwhile, there were no significant findings regarding the financial performance of not-for-profit and non-federal governmental hospitals that

vertically integrated. These findings suggest that for-profit hospitals may make different decisions regarding how they actually integrate SAC into the care continuum.

Despite the contributions of our research, our study has several limitations. First, we used data from Hospital Compare for the 30-day readmissions. Hospital Compare does not report readmissions data if they go below a certain threshold and instead provides a response of "too small to calculate." For some years, therefore, we had to eliminate data. Next, we used data from the American Hospital's Association Annual Hospital Survey and relied on hospitals accurately reporting on their sub-acute care strategies. We recognize that in some years the responses to these questions were inconsistent. Unfortunately, this is the only source for this information. In addition, we used data from the Area Resource File, which was not available for every year of the study. This limitation is diminished by the fact that some of this data does not change significantly over one or two years' time. Lastly, we used financial data from the Medicare Cost Report. Only hospitals that provide care to Medicare beneficiaries provide this information. The majority of hospitals in the U.S. accept Medicare; however, we do not believe this impacts the generalizability of our study.

## Conclusion

As hospitals continue to respond to the payment incentives outlined in the ACA, it is important for them to understand how their organizational strategies may ultimately impact their financial performance and quality outcomes. The findings of this study suggest that hospital vertical integration into SAC can impact 30-day readmissions rates, but not subsequent financial performance. Hospital managers should be mindful that vertical integration may improve some parts of their organization's performance but that

these benefits may come at a financial cost. Future research should examine the financial impacts of hospital vertical integration into SAC and also the relationship between more disease types of hospital 30-day readmission rates for which hospitals are penalized.

Table 1
*Variables*

| Independent Variable | Measurement | Type |
|---|---|---|
| Hospital Vertical Integration into SAC | Hospital owning a skilled nursing facility (AHA) | Hospital level skilled nursing facility = 1/0 |
| Hospital Location | Rural or Urban location (RUCA) | Rural=1/0, Urban = 1/0 |
| Hospital System Membership | System membership (AHA) | System Membership = 1/0 |
| Hospital Ownership | Investor-owned, Not-for-profit or Non-federal governmental (AHA) | Investor-owned= 1/0, Not-for-profit = 1/0, Non-federal governmental |
| Dependent Variable | | |
| Financial Performance | 1 year lag operating margin (CMS Cost Report) | Percentage |
| | 2 year lag operating margin (CMS Cost Report) | Percentage |
| Operating Performance | 30 day heart failure readmission rate | Percentage |
| | 30 day Pneumonia readmission rate | Percentage |

Table 2
*Descriptive Statistics*

| | Operating Margin | | 30 day Readmissions | |
|---|---|---|---|---|
| | 1 Year Lag | 2 year Lag | Heart Failure | Pneumonia |
| Hospital-Year Observations | 12,575 | 13,676 | 11,328 | 12,007 |
| Unique Hospitals | 3,815 | 3,862 | 3,626 | 3,361 |
| Independent Variables | | | | |
| Rural | 6,205 (50%) | 6,813 (51%) | 4,415 (42%) | 6,788 (49%) |
| Urban | 6,133 (50%) | 6,595 (49%) | 6,001 (58%) | 7,118 (51%) |
| System Affiliation | 5,083 (62%) | 5,577 (64%) | 7,923 (58%) | 5,996 (47%) |
| Not-for-profit | 5,778 (62%) | 6,307 (62%) | 8,578 (63%) | 8,774 (62%) |
| Investor-owned | 1,363 (15%) | 1,479 (14%) | 2,234 (16%) | 2,196 (15%) |
| Non-federal, governmental | 2,103 (23%) | 2,419 (24%) | 2,792 (21%) | 3,164 (22%) |
| Dependent Variables Mean (SD) | | | | |
| Operating Margin 1 Year Lag | -3.26 (17.02) | | | |
| Operating margin 2 year Lag | | -3.88 (17.52) | | |
| 30 Day Heart Failure readmissions | | | 21.99 (2.87) | |
| 30 Day Pneumonia readmissions | | | | 17.81 (1.56) |

Table 3

*Fixed effects results*

| | Operating Margin (H1) | | 30 Day Readmissions (H2) | |
|---|---|---|---|---|
| | Operating Margin, 1 year lag | Operating Margin, 2 year lag | Heart Failure 30 Day Readmission Rate | Pneumonia 30 Day Readmission Rate |
| Primary Analysis | | | | |
| Hospital Vertical Integration into SAC | 0.572 (N=12,575) | 0.729 (N=13,676) | 0.107 (N=11,328) | -0.233** (12,007) |
| Secondary Analysis | | | | |
| Rural Hospital Vertical Integration into SAC | 0.6931 (N=6,343) | 1.271 (N=6,980) | 0.241 (N=6,332) | -0.523*** (5,820) |
| Urban Hospital Vertical Integration into SAC | 1.082 (N=6,370) | 0.667 (N=6,863) | -0.576* (7,625) | -0.147 (6,212) |
| System Affiliated Hospital Vertical Integration into SAC | 0.587 (N=9,504) | 0.444 (N=10,591) | 0.141 (N=6,598) | -0.196 (N=5,600) |
| Investor-Owned Hospital Vertical Integration into SAC | 4.045 (N=4,694) | 5.994** (N=4,950) | 0.974* (N=1,570) | 0.352 (N=1,547) |
| Not-for-Profit Hospital Vertical Integration into SAC | 0.648 (N=9,109) | -0.7868 (N=9,778) | -0.131 (N=7,437) | -0.417*** (N=7,823) |
| Non-Federal Governmental Hospital Vertical Integration into SAC | -0.503 (N= 5,434) | 0.385 (N=5,890) | 0.383 (N=2,321) | -0.167 (2,695) |

*p<.1 **p<.05 ***p<.01

Note: Each model includes covariates for year dummies and standard errors are clustered by hospital ID

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# CHAPTER 4

# HOSPITAL VERTICAL INTEGRATION INTO SUB-ACUTE CARE:A MULTIPLE CASE STUDY

by

C. TORY H. HOGAN, CHRISTY HARRIS LEMAK, LARRY HEARLD, NATALIYA IVANKOVA, NIR MENACHEMI, BISAKHA SEN, JACK WHEELER

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## Introduction

The U.S. health care system is undergoing systemic change as a result of the Affordable Care Act (ACA)(Rosenbaum, 2011). The ACA attempts to curb unnecessary health care spending and eliminate quality gaps through payment reforms that incentivize improved care delivery through care coordination (Berwick & Hackbarth, 2012). As a result, some hospitals are becoming systems that have the capabilities to manage patients as they move through the continuum of care. Some providers have pursued these capabilities through vertical integration. Vertical integration refers to the acquisition of various components of the continuum of care in an effort to reduce market transaction costs (Williamson, 1975), increase asset specificity associated with care (Scott & Davis, 2007), and mitigate environmental threats (Campling & Michelson, 1998). Vertical integration has resulted in health systems with different health services within one organizational entity, such as a single hospital that owns physician practices, outpatient surgical centers, skilled nursing facilities, and diagnostic imaging centers.

Policymakers believe that care coordination and improved care delivery will improve outcomes and address unnecessary spending in our health care system (Aronson, Bautista, & Covinsky, 2015; Berwick & Hackbarth, 2012). The ACA addresses these issues through three payment reform programs: Accountable Care Organizations (ACOs), bundled payments and performance based reimbursements. ACOs bring together providers under a single consortium with the goal of serving populations of patients within a global budget. Bundled payments group all charges across providers associated

with a diagnostic related group into a single payment. Performance based reimbursements link patient quality outcomes to reimbursement. Hospitals with high quality outcomes are rewarded with bonus payments and poor quality performers are penalized. The ACA payment reform programs link organizations, which have traditionally received separate payments, together under a single payment. This encourages providers to coordinate patient care across the continuum of care (Guterman, Davis, Schoenbaum, & Shih, 2009; Vogus & Singer, 2016). Within the potential providers along the continuum of care, researchers have predicted that hospitals will vertically integrate into sub-acute care (SAC) in response to payment reform (Mor & Besdine, 2011; Shay & Mick, 2013). Vertical integration into SAC may enable hospitals to better communicate among providers and put programs into place that more easily transfer patients between providers. Management of these processes will provide hospitals with the ability to take advantage of new payment systems.

This paper reports on the second, qualitative phase of a mixed methods study, aimed at understanding why and how hospitals adopt a vertical integration strategy for sub-acute care (SAC). The qualitative phase of the study addressed the following research question: What are the reasons and strategies hospitals adopt a sub-acute care vertical integration strategy? Because the primary focus of the study was to further explain and understand previous qualitative studies, we chose a qualitative, multiple case study research design (Yin, 2013). We selected this design because of its ability to provide a holistic, in depth perspective (Feagin, Orum, & Sjoberg, 1991). Quantitative research has identified the market and organizational factors associated with hospital vertical integration into SAC. The multiple case study enabled us to examine multiple

hospitals types, located in a variety of markets. In addition, the multiple case study design enabled us to navigate the complexities associated with hospital strategy, and better address our research questions. Resource dependence theory and transaction cost economics theory provided the theoretical context for exploring this topic.

## Background

The SAC sector provides inpatient care to patients needing assistance in the recovery and rehabilitation process (Buntin, Colla & Escarce, 2009). Over the last 30 years, there has been significant growth spending for SAC services (Yip, Wilber, & Myrtle, 2002). For example, in 2010, Medicare spent $143 billion on nursing facilities (Centers of Medicare and Medicaid Services, 2016). Forty percent of all Medicare beneficiaries are transferred to a SNF, IRF or home health agency, making Medicare beneficiaries the highest utilizers of SAC services (AHRQ.gov). Unnecessary hospital readmissions from SAC facilities are a significant problem. Twenty-five percent of all Medicare beneficiaries transferred to a SNF are readmitted to a hospital (Mor, Intrator, Feng, & Grabowski, 2010). Policy makers blame high readmission numbers on poor discharge planning and poor communication across providers (Jenks, Williams, & Coleman, 2009).

As previously mentioned, the ACA instituted payment reforms aimed at reducing unnecessary health care spending and improving the quality of care provided in the SAC sector. The ACA is not the first public policy that has attempted to curb spending within the SAC industry. The Balanced Budget Act of 1997 (BBA) dramatically altered the environment of the SAC industry by introducing the prospective payment system (PPS). The PPS is a method of payment where diagnostic-related groups for inpatient stays are

associated with payments that are fixed and predetermined (cms.gov). Fixed payments means that SAC providers were forced to consider their financial goals, while also balancing patient needs (Grabowski, 2007; Mor, Intrator, Feng, & Grabowski, 2010). As a result, the SAC sector evolved into a fragmented system where patients are potentially passed from provider to provider, with few coordination and transitional services being provided (Buntin, Garten, Paddock, Saliba, Totten, & Escarce, 2005). Care coordination and transitional services were not reimbursed or incentivized through the PPS system.

Poor care transitions and coordination of care between providers can result in costly hospital readmissions. Hospital readmissions from SAC facilities resulted in an estimated $4.34 billion in 2006 (Mor, Intrator, Feng & Grabowski, 2010). The transitions in care from acute care centers to SAC facilities represent an area for significant cost savings and quality improvement in the U.S. health system (Coleman & Berenson, 2004). Research shows that fewer readmissions are associated with transitions in care that foster coordination among providers, communication across care settings, and continuity (Coleman, Parry, Chalmers, Min, 2006).

The ACA established three payment reforms that aim to curb unnecessary spending and improve outcomes. Bundled payments, pay for performance programs, and ACOs make hospitals and SAC organizations jointly financially and clinically accountable for patient outcomes (Mor & Besdine, 2011). First, bundled payments combine hospital and SAC payments to provide a single payment a care episode. Additionally, pay for performance programs reward hospitals for high quality care and penalize for poor quality care. In the context of this research, the Hospital Readmission Reduction Program (HRRP) (Section §3025)(CMS, 2012) directly addresses the issue of

unnecessary readmissions. This policy states that the Centers for Medicaid and Medicare Services (CMS) will reduce payments to hospitals with excess 30-day readmissions for Acute Myocardial Infarction (AMI), Heart Failure (HF) and Pneumonia (PN), creating a financial incentive for hospitals to reduce readmissions in these areas. Lastly, ACOs are an entity in which a group of doctors, hospitals, and other providers agree to be responsible for the overall cost and quality of care for a patient population. Provider reimbursement is linked to quality and performance measures, and risk is distributed to all providers in the ACO. These components of the ACA place a new emphasis on the relationship between hospitals and SAC and their ability to jointly work together to improve patient outcomes.

## Theoretical Considerations

There are many theories that seek to explain why a firm seeks to vertically integrate themselves (Arndt & Bigelow, 1991). Vertical integration is considered to be a form of diversification (Harrigan, 1985) and a form of organizational innovation (Harrigan, 1984). For the purpose of this paper, vertical integration is defined as "the provision of a continuum of office-based care, acute care, and post-acute care services within a single organizational or joint ownership structure, allowing for a coordinated progression of services across the patient care spectrum" (Shay & Mick, 2013 p. 16). The level to which a firm has vertically integrated, or how many the stages of production are organized under one firm, depends on how developed the industry is, the volatility of competition, a strategic business unit's bargaining power, and the corporate strategic objectives (Harrigan, 1985). Within the context of this study, resource dependence theory (RDT) and transaction cost economics arise as two theories to explain hospital vertical

integration into SAC. Two theories are utilized because each provides different perspectives on why an organization will vertically integrate and what will be expected as a result of vertically integrating. This next section will provide an overview of the theory's outcomes in healthcare, as well as how each theory provides an appropriate context for understanding the qualitative phase results.

**Transaction Cost Economics (TCE)**

TCE has been used to explain vertical integration across a wide array of social sciences and provides a theoretical framework to understand and explain vertical integration in the U.S. health care system (Macher & Richman, 2008). Within the context of healthcare, TCE has been the basis for understanding and explaining vertical integration within hospitals and health systems, especially within the context of coordinated delivery systems (Bazzoli, Shortell, Dubbs, Chan & Kralovec, 1999; Mick, 1990; Mick & Conrad, 1988). The theory explains that hospitals merge together in an effort to gain economies of scale, or cost advantages that organizations can take advantage of due to size and scale of operations (Alexander & Morrisey 1988). Hospitals, for example, which belong to stronger, more closely knit systems may be able to reduce their monitoring and coordination costs (Bazzoli, Chan, Shortell, & D'Aunno, 2000).

Within the context of hospitals and SAC, monitoring and coordination costs refer to the costs associated with establishing relationships with third party providers, maintaining those relationships, and ensuring that these providers are meeting certain quality standards. The frequency of a transaction, uncertainty, and complexity of services result in more vertically integrated services within SAC (Zinn, Mor, Intrator, Feng, Angelelli, & Davis, 2003). Between hospitals and SAC, transaction costs for hospitals

may include: 1) the costs associated with placing patients at a SAC facilities, 2) monitoring facilities to ensure quality standards are being met, and 3) the loss in reimbursement associated with not being able to place a patient in a SAC setting in a timely manner. The costs associated with these transactions may be better managed when a hospital owns a SAC setting (Lehran & Shore, 1998).

**Resource Dependence Theory**

Resource Dependence Theory (RDT) is one of the most widely used theories in explaining vertical integration (Hillman, Withers, & Collins, 2009). RDT explains that a firm's behavior is dependent on its interaction with the environment (Scott & Davis, 2007). In order to be successful, firms must operate within an ever-changing external environment (Barnard, 1938). A firm makes decisions based on their internal resources and the external environment (Pfeffer & Salancik, 1978). In the context of this research, vertical integration is a response to an organizations environment and a means for achieving a competitive advantage and has been examined in management and economics literature as an important strategic initiative (Perry, 1989). Pfieffer and Salancik (1978) explain that firms make decisions based on a culmination of external organizational constructs: munificence, dynamism, and complexity. Munificence describes the availability and accessibility of resources that an organization needs. Dynamism refers to the rate of change in an organization's environment, or how much an environment is changing and how fast that change is occurring. Lastly, complexity refers to the size, volume, and interconnectedness of an organization with other environmental actors. When these components become greater, an organization's environment becomes more complex. When this complexity creates uncertainty, firms then adopt strategies to

manage the uncertainty. In relation to this study, RDT theory explains that, by potentially vertically integrating, firms will respond to increases in uncertainty as it relates to munificence, dynamism, and complexity.

Resource dependency theory has been used to understand a wide array of organizational strategies in the healthcare industry (David & Cobb, 2010). In the area of SAC, resource dependency theory has been applied to understand how healthcare providers gain a competitive advantage (Alexander & Lemak, 1997; Banaszak-Holl et al., 1996; Conrad & Dowling, 1990; Zinn, Weech, & Brannon, 1998). Healthcare organizations will vertically integrate resources that will give their firm a competitive advantage and better manage their complex environment (Pfeffer & Salancik, 2003). If hospitals are to adopt a vertical integration strategy, both the hospitals' environment and organizational characteristics must be evaluated (Davis & Cobb, 2010). Organizational characteristics impact how hospitals to respond to their environment (Cook, Shortell, Conrad, & Morrisey, 1983). Taking internal and external factors into consideration, hospitals can employ strategies that enable them to most effectively achieve a competitive advantage by acquiring the necessary resources.

Both RDT and TCE provide some level of understanding of the management decisions to vertically integrate into PAC. In sum, hospitals are said to vertically integrate to decrease transaction costs, manage their competitive environment, and maintain market share. Conrad and Dowling (1990) outline five major reasons organizations vertically integrate: 1) Production cost savings, 2) Transaction cost savings and service coordination benefits, 3) Overcoming market imperfections, 4) Management and internal organization factors, and 5) Environmental conditions. Based on these reasons, while

neither wholly explains the phenomenon of vertical integration, both theories provide some insight into such decisions. In conclusion, Figure 1 outlines the relationship RDT and TCE have to vertical integration strategic decisions. For this mixed methods study, it is appropriate to consider that both theories may provide an explanation of hospital vertical integration into SAC.

## Methods

### *Design*

We used a multiple case study design to understand why and in what ways hospitals adopt a sub-acute care (SAC) vertical integration strategy. Multiple case study design was chosen because of its ability to explore situational complexity within a phenomenon of interest (Stake, 2013). Specifically, we utilized an instrumental case design to understand and describe hospital vertical integration into SAC. (Stake, 1995). Within our study, different health systems were selected to understand hospital vertical integration into SAC. As part of the instrumental case design, our analysis included a search for patterns across multiple cases and the identification of unique characteristics within each case (Stake, 1995).

### *Sample*

Health systems were purposefully selected based on the results of the quantitative phase of the sequential quan→qual phase of the mixed methods study. The health systems were chosen as the unit of analysis because these organizations were able to speak to the perspective of multiple hospitals in different types of markets and geographic locations. The health system is the parent company for a multiple hospitals. In some cases, the health system was also part of a large national organization. We

selected three health systems based on a variety of market and organizational variables. The following market and organizational variables were evaluated while selecting each case: ownership status (Not for profit or investor owned), system affiliation, facility locations, and facility size. During the quantitative phase of the study, we tested each of these variables to understand their statistical association with hospital vertical integration into SAC. Ownership status, facility location, and bed size were found to be significantly associated with vertically integrated hospitals or with hospital performance. Facility size was not statistically significant during the first phase of the study, but earlier studies on this topic also supported the use of this characteristic (Wheeler et al., 1999). Therefore, based on the findings of the quantitative phase and previous research on the topic, we selected three cases based on the following market and organizational factors: system affiliation, facility location, facility size, and ownership status. An overview of these market and organizational factors for each case selected is available in Table 1

We chose a multiple case study design in order to increase the robustness of the study (Herriott & Barlow, 1976) and to enable us to follow a replication design. Multiple case design increases the robustness by strengthening the replication of findings (Yin, 1994). Through replication, each case in our study confirms or disconfirms each other. Each case was selected in order to predict similar results (Yin, 2014). Each case selected was vertical integrated into SAC. This means that each organization either had a free standing SAC facility, a hospital that was part of the health system, or a hospital that is part of their system has a SAC facility that is vertically integrated. This information was confirmed through the organization's website and the American Hospital Association's Annual Hospital Survey. In addition, each case was chosen in order to alter the

experimental conditions of the organizational and market factors that were examined in the quantitative phase. Each case was in varying locations throughout the United States in order to gain the perspective of multiple markets. Lastly, the cases were selected because they are able to address the relationship between a wide variety of market and organizational factors that may or may not impact the adoption of a vertical integration strategy.

### *Data Collection*

For the qualitative phase, we utilized triangulation of multiple sources of data that allows for rich descriptions of the themes and cases (Yin, 2013). We collected data from the following data sources: 1) in-depth semi-structured interviews with health system executives, such as the chief strategy officer, chief financial officer, and the senior vice president of Post-Acute Services (N=13); 2) analysis of the information posted on health system websites (N=3); 3) analysis of the Annual Reports (N=2); 4) analysis of news articles about the health system and organizational strategy (N=3); and 5) analysis of the CMS publicly available documents (N=3). Findings from the in-depth semi-structured interviews were our primary data source for developing themes and sub-themes within and across cases. Findings from the secondary data sources were largely confirmatory and helped to enhance the research team's understanding of the emergent themes and sub-themes. To maintain anonymity of each organization selected for the case study, we do not provide citations from any secondary data sources (annual reports, news articles, and health system websites). The semi-structured interview protocol was developed based on the organizational and market factors that were examined during the quantitative phase of the study. The quantitative phase of the study used Transaction Cost

Economics and Resource dependence theory to provide a theoretical framework. A copy of the interview protocol can be found in the appendix (Appendix A). We conducted at least three interviews with each administrator. A list of the titles of each participant can be found in Appendix B. These people were considered the most important and most informed regarding the organization's SAC strategic decision making because they were in positions that deal with organizational strategic decisions. Due to the complex nature of the organizational strategy and vertical integration behavior, the use of the cross-case design, and the participants' ability to clearly communicate their organization's SAC strategy, three interviews per case allowed the team to reach data saturation (Mason, 2010; Morse, 2000; Sandelowski,1995).

All interviews were completed over the telephone and were digitally recorded using Smart Voice Recorder. Interviews were then transcribed verbatim using the transcribing service Rev.com. All data was entered into NVivo 11, a software for qualitative data organization, management, and analysis. This software was used by the primary researcher to store, code, and identify themes within the results. In order to maintain anonymity, participants and organizations were assigned pseudonyms for analysis and reporting. The analysis was completed at two levels: within each case and across the cases (Stake, 2013). As suggested by Creswell (1998, 2002), we completed the following steps to analyze the results: 1) preliminary examination of the data where the primary author reviewed the transcribed interviews and took notes; 2) coding each interview within each case; 3) using the codes to develop themes and sub-themes; 4) verifying the themes and sub-themes with other members of the research team; 5) connecting and inter-relating themes; 6) constructing a case study table consisting of

themes, sub-themes, and illustrative quotes for each case; and 7) constructing a cross-case thematic analysis by compiling a list of all themes and sub-themes identified across all cases and then comparing the cases based on the commonalities and differences in the associated themes and subthemes. It also involved determining which themes were most prominent throughout the cases and which themes were unique to specific cases. The data verification process included triangulating different sources of information within each case (Leach & Onwuegbuzie, 2007), member checking by confirming the interviewer's understanding of the interviewee's response by summarizing and paraphrasing throughout the interview (Lincoln & Guba, 1985), crafting rich descriptions of the cases, and confirming information from the interviews with publicly available information.

### *Ethical Considerations*

Approval for this study was granted by the University's Institutional Review Board. Participants were informed that their participation in the study was voluntary. They were also informed that their identity would be protected, that they could remove themselves from the study at any time, and that all information obtained would be deleted immediately. In addition, participants were informed that their organization's name would be protected and we would not reveal any unique, identifying information regarding the organization's identity. Within quotations, identifying information was removed by the primary researcher and replaced with non-identifying contextual information in brackets [example]. Lastly, we do not provide citations for any information obtained from websites, press releases, or the names or titles of each speaker in order to maintain anonymity of each case.

## Results

***Case Analysis**:*

*Case One* represents an investor owned healthcare system with hospitals located in a large urban area in the western United States. This healthcase system consists of multiple hospitals, stand-alone ambulatory surgical centers, free standing emergency rooms, occupational medicine and rehabilitation outpatient clinics, medical imaging centers and a free standing rehabilitation hospital. Case One is also part of a national health system. The review of the organization's website and the AHA database verified that Case One was vertically integrated into SAC at the system level with a free-standing rehabilitation hospital.

Upon completing the analysis of Case One, three major themes emerged that help explain why and how hospitals vertically integrate into sub-acute care: (1) value based purchasing, (2) market factors, and (3) organizational factors. The first theme, value based purchasing, was the most frequently discussed theme. This theme describes how the health system's decision to vertically integrate or not is influenced significantly by the value-based payment incentives established by the Affordable Care Act. Respondents from this case stated that the organization's participation in the Comprehensive Care for Joint Replacement Model (CJR) provided a large motivation to better manage patients as they move from acute care providers to SAC providers. The organization's participation in the CJR program was also supported through the information on the CMS website. Multiple administrators from Case One also stated that they often considered and chose another strategic alternative other than vertical integration. Table 2 presents the three themes with related subthemes and illustrative quotes for Case One.

*Case Two* includes a not-for-profit, faith-based health system with hospitals located in multiple urban areas, along with hospitals in rural areas (including critical access hospitals) in the southern United States. As part of the regional health system, Case Two consisted of multiple care settings along the continuum, such as community hospitals, an academic medical center, a cancer hospital, stand-alone ambulatory centers and emergency departments, long term care hospitals, home health, outpatient physician clinics, and free-standing rehabilitation hospitals. Case Two is also part of a national health system. Administrators from Case Two described their organization as being in both a competitive payer market and a competitive market for SAC providers, specifically citing the presence of large national SAC providers. The organization's website supported and reiterated confirmed that they were vertically integrated into SAC at the system level into SAC—due to the ownership of a free-standing rehabilitation hospital—and at the hospital level through an in-hospital SNF. This was also confirmed in the AHA database.

Upon completing the case analysis of Case Two, the same themes emerged that were observed in Case One: (1) value based purchasing, (2) market factors, and (3) organizational factors. Of the three themes, value based purchasing was the most prominent theme. These theme described how the strategy toward integrating SAC is influenced by the value based payment incentives established by the Affordable Care Act. This organization participated in the Medicare Shared Savings Program and the Comprehensive Care for Joint Replacement Model (CJR) program. The organization's participation in the Medicare Shared Savings Program and CJR program were supported by information on the CMS website. CMS publishes the names of all organizations

participating in the CJR program. They were focused on SAC strategies that enabled them to reduce readmissions, reduce length of stay in a SAC facility, and improve the overall health of the patients that are programs. Table 3 presents the three themes with related subthemes and illustrative quotes for Case Two.

*Case Three* presents a not-for-profit health care system that owns, manages, and provides strategic consulting for hospitals and critical access hospitals located in small rural communities. The majority of the hospitals in this system are located in the south, while a small portion are in the west and northeast United States. In addition to working with hospitals, they also own, manage, and provide strategic consulting for long-term acute care hospitals.

Upon completing the case analysis of Case Three, the same three themes emerged that were found in Cases One and Two to explain why and how hospitals vertically integrate into sub-acute care: value based purchasing, market factors, and organizational factors. In this particular case, market factors, including the geographical location, was the most prominent theme that explained what parts of the environment organization's respond to. Many of the communities in which the organization operated in were geographically isolated, and their patients may not have had access to a SAC bed within a large distance. In addition to the location of the hospital and the isolation this created to other providers in the area, leaders looked at the level of SAC market competition and availability within their communities. Table 4 presents the three themes with related subthemes and illustrative quotes for Case Three.

***Cross Case Analysis:***

As outlined above, three common themes emerged from the case analysis that help explain reasons for and strategies hospitals adopt a sub-acute care vertical integration strategy. These themes, related sub-themes, and their presence cross cases is presented in Table 5. In the sub-sections below, we describe each theme in more detail, including illustrative quotations from participants and documents.

***Value-Based Payment Incentives***

Each participant described several value based payment incentives that were established through the Affordable Care Act as important factors that influenced how and why hospitals adopted a vertical integration strategy into SAC. The Center for Medicare and Medicaid Services (CMS) defines a value-based program as a program that "rewards providers with incentive payments for the quality of care they give to people with Medicare" (cms.gov). Within this theme, five sub-themes found varied representation across the three cases.

The first sub-theme, "*reducing hospital readmissions rates"* was consistent across all three cases. Hospital and health system managers were paying close attention to readmissions rates because they were associated with a financial penalty for the hospital. For example, the Chief Financial Officer from Case One stated that "we look at all our re-admissions, but we obviously pay, and every hospital pays closest attention to the ones that are attached to a penalty." In all three cases, administrators explained that they examined their SAC providers and strategy and whether vertical integration was an

appropriate part of a larger strategy to reduce their readmissions. For example, an administrator from Case Three said:

> A lot of this, I think, work that has become maybe a little more formal and a little more structured with our hospitals and the post-acute providers in their community has everything to do with preventing re-admissions. Because the pay for performance programs have seen this re-admission reduction program is one of those.

For all three organizations, readmissions were a direct threat to the organization's revenue, and SAC was seen as an area that could directly impact a hospital's readmissions rate. Readmission rates were also used as a metric to track the success of a SAC strategy.

The second sub-theme, which emerged in two cases, was *"implementing Accountable Care Organizations."* Participants in two cases described that their organization's interest in pursuing a vertical integration strategy into SAC was motivated by their participation or potential participation in the Medicare Shared Savings Program or another form of CMS' ACO. We were able to confirm this information on the CMS website. For example, an administrator from Case Two explained that they have shifted to focus on SAC, in large part, due to the ACO:

> ...post-discharge isn't something that we've really focused on in general and so those transitions of care are where the ball gets dropped and that can lead to adverse events. Poor outcomes for patients even when they're not adverse events safety concerns with medication and all these other things, so trying to iron out

> those pathways and create predictable outcomes for patients. Where we are at risk for things like shared savings programs or the ACO and being able to take those to market as those arrangements are expanded by CMS and other payers.

In addition, it was noted that the ACO alone does not create a compelling enough reason to vertically integrate or adopt a strategy to better manage the SAC continuum of care. Instead, the pressures of the ACO model are combined with other market pressures and create a scenario where organizations need to adopt some sort of strategy to manage the SAC spectrum. For example, an administrator from Case Three noted, "I think that [the] combination of the pressure from the ACO and the competitive nature, like landscape of healthcare in those communities just create the perfect combination [to integrate SAC]."

The next sub-theme, *"bundled payment programs,"* describes a factor that influenced the adoption of a vertical integration strategy for Cases One and Two. An administrator at Case Two described how the bundled payment program had directly influenced their organization to adopt a strategy to manage SAC: "I think bundled payments have influenced us greatly. I think it really has driven how we're going to do, or at least beginning to get us organized around how we work with post-acute. Up until this point, I don't think we much had a strategy." Administrators from Case One noted that, through the bundled payment program (CJR), they were able to get more information regarding quality indicators such as readmission rates. Interviewees also indicated that they were able to have a group of preferred providers, comprised of the better performing SAC providers, established by the readmission information available through the bundled payment program. We were able to confirm the organization's participation in the CJR program on the CMS website. CMS published the names of all organizations

participating in the CJR program. The CJR program allowed them to inform patients of their preferred providers. As a result of having more insight into how other providers were performing and the ability to better inform their patients, vertical integration was not seen as being the most appropriate way of managing patients as they move from acute care to SAC. For example, an administrator from Case One noted that

> Yeah, I love the way that CMS changed the CJR [Comprehensive Care for Joint Replacement program: CTH] law. Basically we're the only ones at risk. Physicians aren't going to sign a risk contract, and for the skilled nursing facilities, really, they're incentive is to be on our preferred provider network list so that they can get more referrals, but at the end of the day, there's a penalty because the episode set was too high, the hospitals are the ones on the hook. CMS allows you to cost share, and to have upside and downside with a certain group of people that are involved in this.

Administrators from Case Two described how the bundled payment program was also linked to the fourth sub-theme, *"reducing hospital length of stay."* Length of stay was noted as a motivating factor that influenced their performance in the bundled payment programs and other value based payment programs. Cases One and Two described how their organization's length of stay is associated with their success as ACOs and in capturing the full, most robust bundled payment possible.

Lastly, the fifth sub-theme, *"dealing with changing Medicare payment incentives"* was identified by talking to administrators from Case One and Two. Their general consensus was that CMS programs were moving toward payment systems that would put pressure on the SAC providers. Administrators described the importance of

understanding the Medicare policies and being sure that the organizations were working with SAC providers in a way that did not jeopardize the acute care center's ability to be fully reimbursed. For example, an administrator from Case Two stated:

> Just that organizations have to be creative about how they approach this section [SAC] of the market and then figure it out as they go along, these are skill sets that we don't currently have that need to figure out because these payment models aren't going away."

An administrator from Case One also indicated that they were trying to utilize sub-acute care in a way that is in line with the way that healthcare reform is moving because the changes in reimbursement for Medicare dollars is not going away or changing any time soon.

Value based purchasing was a common theme across each case study. This theme describes how organizations are aligning themselves to take advantage of the value based payment programs. Overall, as illustrated above, Case One and Case Two, which have hospitals in urban areas, have more similarities across this sub-theme of value-based payment incentives. Case Three, which is focused on rural hospitals, had fewer similarities with the first two cases at this sub-theme level. This indicates that rural hospitals may face different strategic opportunities than non-rural hospitals.

***Market Factors***

In all three cases, participants described multiple market factors as being the variables that influenced how and why hospitals vertically integrate into SAC. This

theme can best be described as an external environmental factor that influences the demand for SAC. Within this theme, four sub-themes were identified across the cases.

The first sub-theme common to each case was *"responding to SAC Market Competition."* Administrators from each case described that their organization's decision to vertically integrate or not into SAC was greatly influenced by the availability of high quality SAC providers in their hospital market areas. Consistent across each case, participants noted that they were less likely to vertically integrate when their hospitals were located in areas where there was a competitive SAC market or the presence of national providers in the market. For example, an administrator from Case Three explained, "...if there's other providers servicing that need or if there is one, then you'll say, 'Do we really need to be doing this? Does this make sense?'" Similarly, an administrator from Case Two stated that the organization adopted an alternative strategy to integrating the SAC continuum of care due to the presence of large national providers in their market place: "...the presence of … basically large subacute, post-acute providers, I think that added, just figuring we're better off working with the folks that are here than trying to create our own." Meanwhile, another administrator from Case Two explained that, though there is a lot of competition, this competition creates a lot of variation in outcomes for patients. He elaborated: "We looked at discharges and for our downtown medical campus, one of those facilities in any given year we had...discharges to over 100 skilled nursing facilities and that kind of variation creates uncertainty." For Case Two, this type of uncertainty created additional pressure to adopt some sort of strategy toward SAC with the aim of reducing uncertainty and improving the predictability of outcomes for patients who utilize SAC upon being discharged from their facility. Administrators

from each case described the market for SAC as being competitive, arguing that there were enough beds to meet the demand for SAC in the communities their hospitals were in. For example, an administrator from Case One stated that

> It's [The SAC market; CTH] incredibly competitive. It's competitive in the sense that you have a lot of convenient locations for patients to choose from, and physicians that are financially motivated to refer patients to their own sub-acute type setting...

An administrator from Case Three explained that in rural areas, where there are enough beds, some providers of SAC might be struggling to survive, so they are considering SAC vertical integration as a way of keeping those beds available in their market place.

The next sub-theme identified was *"Anticipating Population Changes."* Two cases recalled that their vertical integration strategy, was, in part, a response to a change in the population and what the population demanded. For example, Case One vertically integrated into inpatient rehabilitation by building free standing rehabilitation hospitals and adding in-patient rehabilitation units into existing acute care centers as a result of the patient population mix. One administrator from Case One said,

> [The health system leaders; CTH] identified rehab as an enormous opportunity of growth for the company, and specifically within the company in the [City Name] market, our [Hospital Name] location, really had the patient population mix, the service lines that would support a good rehab program. Overnight essentially, the idea was really agreed upon that we would start branching back out into rehab and

starting to put new units back into existing hospitals that may or may not have at one time had them. It quickly became the second fastest growing service line within the company.

In Case Two, when an administrator was asked what factors influenced the health system's decision to vertically integrate at a specific hospital location, they described how their organization vertically integrated in part due the growth of the community their hospital served. The administrator said "I think they've got a lot of orthopedic. I think it's such a fast-growing community, relative to its size, that they see that as a real opportunity to do something for the community that's maybe not as developed as it could be."

Responding to a population change was identified in two out of three of cases' decision to adopt a vertical integration strategy.

The third sub-theme within Market Factors is *"geographic location of acute care center."* This can be described as the health system's location and primary patient population mix within a rural or urban market. Administrators from Cases Two and Three both described how, when the organization decided to vertically integrate or not, part of this decision was in an effort to manage the transition from acute care to sub-acute care within the challenges associated with rural populations and healthcare markets. Participants from both cases described the difficulty of ensuring the use of SAC. In particular, because very rural acute care centers—many of which are critical access hospitals—are not within close proximity to the patients' communities, they struggle to ensure their patients utilize SAC facilities. We were able to confirm the location of the hospitals and presence of critical access hospitals based on information on the

organization's website. An administrator from Case Two explained the challenges with this part of the care continuum in the following way:

> When you're talking about the critical access hospitals, that population is much more spread out and so your ability to say to somebody [you should go to SAC next], who wants to drive two counties over to go to the skilled nursing home and actually doesn't have access to transportation, that's a whole different set of issues.

Administrators from Case Three reported that, in light of the isolation experienced by their patient population, they may vertically integrate SAC in order to ensure that the patients can be in their own community. For example, an administrator stated,

> ...for patients to travel, it's going to be very challenging. It may not be for instance the immediate short term care sites, they have a surgery, but maybe it would be for their sub-acute care or for their rehab and physical therapy. Instead of having them travel back and forth 80 miles for daddy's physical therapy, they can do that in some of the smaller community hospitals that we work with.

Hospital administrators consider their organization's market factors when deciding if they will vertically integrate into SAC. For some organizations, their vertical integration strategy is a critical component of ensuring their patients are able to have access to SAC.

Lastly, the sub-theme *"patient demand for SAC"* emerged only for Case Three. Administrators here explained that, when they were deciding if they would vertically integrate a hospital into SAC, they strongly considered the current demand for the services and how the services would be utilized. As one participant stated, "If there's not

enough community demand and need for it, or if there's other providers servicing that need or if there is one, then you'll say, "Do we really need to be doing this? Does this make sense?" For Case Three, vertical integration was a response to a specific market demand for SAC care services.

### *Organizational Factors*

Participants described multiple organizational factors that influenced how and why hospitals vertically integrate into SAC. This theme can best be described as the characteristics of an organization's internal environment. Within this theme, there were five sub-themes identified across the cases.

The first sub-theme**,** *"potential strategic alternatives,"* was consistent across all three cases and reflected how participants identified vertical integration alternatives such as substitutes to SAC or substitutes to owning a SAC provider. Participants from all three cases stated that, upon evaluating the current payment incentives, market factors, and their own organizational capabilities, they decided against vertically integrating due to another opportunity in their market place. Administrators from each case described how their organization was developing some sort of a network or closer relationship with the current SAC providers in their market. For example, a participant from Case Three argued,

> One of the strategies that we employ with the secondary market institutions is not just for the subacute settings but certainly for those, particularly the rehab settings, is to create those relationships with the urban community providers, such that they're in a continuity of care that's quote, 'Under the umbrella' of not a

partnership system or a partnered system but sometimes a relationship with an organization where there can be continuity of care.

In line with this perspective, an administrator from Case One stated, "Yeah, you know for me, it's really about trying to pick the right partners. I don't think ... We're not in the business of wanting to own everything, and I don't know that that's a very smart strategy to employ, personally."

In addition to networking, administrators from Cases Two and Three both considered swing beds as an alternative to buying an additional SAC facility. A participant from Case Three said,

> Some of our general acute hospitals also have swing-bed programs. They're limited, you have to have, I think it's less than 100 beds from the Medicare perspective, to qualify to have swing-beds. Again, our swing-bed programs are robust enough that they not only can use it for their own patients, but they are beginning to attract patients back into the community. Again, those that have had to transfer out to larger hospitals because of medical needs, now can come back into the community, into the swing-bed program, which is better for the patient and family, I think.

For both cases, swing beds were an alternative for critical access hospitals in rural areas and were described as being a way that organizations can offer SAC services to patients in a setting that is closer to home and more convenient.

The second sub-theme, which emerged from two cases, was *"appropriate organizational knowledge."* This sub-theme describes how administrators in each

organization consider their internal professional capabilities and knowledge regarding how to provide and run a SAC facility. Participants acknowledged that SAC is a different care model that requires different expertise than what is needed to provide acute care. For example, an administrator from Case Two explained that the organization did not vertically integrate in their largest market, in part due to a lack of organizational knowledge regarding SAC, remarking, "I think probably the driving factor of it is lack of just a knowledge of that area….just figuring we're better off working with the folks that are here than trying to create our own." Meanwhile, administrators from Case One explained that their organization was focused on being a hospital business and that they strived to be the best in that area; for them, SAC was not within their organization's core skillset or business model. For example, one interviewee stated, "For us, we have a free-standing rehab hospital here, and outside of that, we really don't own anything in that post-acute care provider [SAC] world, so for us it's really ... We're a hospital business. That's what we do."

The third sub-theme, which emerged across the three cases, was "*availability of financial resources*." Participants from every case explained that their organization evaluated the current financial status and financial benefits of vertical integration before adopting a SAC strategy. For example, an administrator from Case Two stated: "Limited capital availability...I think, make it prohibitive [to vertically integrate]." Across each case, administrators described situations where the entire health care system was seeing a demand to invest capital and spend money to adapt to the demands of the current healthcare environment. SAC was one item on the long list of areas that needed capital investment. A participant from Case Three described how healthcare administrators in

their organizations evaluate the community's financial resources when deciding if they will invest in a vertically integrated SAC facility. For example, "We try to scope the level of services [SAC] and support and resources to the needs and financial capabilities of that particular community." Meanwhile, a participant from Case One noted that there was very little in the way of financial benefits to vertically integrating and better managing the SAC part of the care spectrum said,

> Of course, right now, aside from the readmission, we get absolutely no reward for that but, again, you have to go down those roads even though there's no, right now, there doesn't seem to be any financial reward for it because you've got to remember your goal. You're supposed to be keeping people healthy, helping people.

In line with this comment, participants from Case Three believe that, although there are very few financial benefits to vertically integrating and adopting a SAC strategy in general, it is better for the patient, which drives their decision more.

Lastly, the second sub-theme, *"Aligning Complimentary Acute Care Services"* was identified. This sub-theme was described in Cases One and Two and explains how hospitals look internally at the services provided within their hospital that will complement SAC. These services may include cardiac care, orthopedic, and stroke centers. Case Two vertically integrated SAC in a hospital that provided a large amount of orthopedic services. The organization's website lists orthopedic services as a type of care they provide. For example, an interviewee from Case Two explained, "Yeah, then our facility in [Name of community] has a skilled nursing unit in it. Which we opened up as a

dual part of this strategy because it made sense with the type of patients and services they focus on in that facility."

Administrators from Case One also identified that their organization vertically integrated into inpatient rehab because they had multiple complimentary services that were growing and gaining market share. We were able to confirm this information on the organization's website and within the AHA database. Vertically integrating inpatient rehab was seen as a way to improve outcomes for patients and better manage their transition, while also gaining an advantage against their competitors. Both Cases One and Two adopted a vertically integrated SAC strategy when there was a complimentary acute care service line that would heavily utilize SAC. In summary, internal organizational factors were identified across the three cases. Participants from each case described how a vertical integration strategy into SAC was impacted by their organizations' ability to adopt one strategy over another. In conclusion, this theme describes three internal organizational factors that influence the type of SAC strategy a hospital will adopt. A hospital's ability to respond to its environment is influenced by internal organizational resources.

## Discussion

This paper presents the results from a cross case analysis that explored how and why hospitals vertically integrate into SAC. The findings reveal that health systems choose to vertically integrate in response to a variety of value based payment incentives, market factors, and organizational factors. These findings are in line with the TCE theoretical framework, which explains that hospitals will adopt a strategy in response to environmental threats. The study revealed that one major environmental threat is the

value based payment incentives. Participants from each case described how that their organizations consider a vertical integration strategy in response to the value based payment incentives that were outlined as part of the ACA. Participants from each case identified that their organization adopted alternative SAC strategies that would still allow them to better manage patients who move from acute care to SAC, but that did not require the financial risk or organizational knowledge that vertically integrating does. The cross case analysis did not reveal significant findings regarding the results that organizations experience upon vertical integration into SAC.

The first major finding of the study is that hospital managers are responding strategically, in part to value based payment incentives outlined as part of the Affordable Care Act by adopting a vertical integration strategy. This finding is in line with previous healthcare management research that found that hospitals adopt a vertical integration strategy in response to pressures from their environment (David & Cobb, 2010). This study provided a more detailed perspective on what organizations consider when they are evaluating various strategic opportunities that will enable them to manage patients that utilize SAC. The first finding that are of interest to healthcare policy makers is that hospital managers felt that they were most at risk for the payment penalties and potential loss in patient revenue associated with poor SAC patient quality outcomes. In light of the fact that the CJR, HRRP, and ACO programs involve providers throughout the continuum of care beyond the hospital, from the perspective of the hospital, administrators in this study felt their organizations were most at risk financially within these value-based payment programs. Policy makers could evaluate the current value based payment policies to determine if they are designed in a way that target the

providers across the continuum and are able to impact SAC healthcare spending and waste.

Next, our study revealed differences in the types of value based payment incentives that healthcare systems noted were associated with their likelihood of considering a SAC strategy. Administrators from Case One and Two, which are either primarily or entirely in urban areas, described how their organization's focus on a SAC strategy was largely incentivized by their participation in the ACO shared savings program, bundled payment/CJR program, and the HRRP program. Meanwhile, administrators from Case Three, which is located in entirely rural markets, stated that their SAC strategy is incentivized primarily by the HRRP program. They also noted that, amongst a small number of their hospitals that are part of a regional ACO, they are or have adopted a SAC strategy. Regardless of whether or not hospitals adopt a vertical integration strategy toward SAC or adopt an alternative SAC strategy, policy makers may take note that the value based payment incentives are not motivating organizations' participation in the same way. Based on the findings of this case study, hospitals located in a rural area are less likely to respond as a result of a value based payment program. This finding is in line with previous research that found that rural hospitals struggle to respond to the healthcare marketplace (DesRoches, Charles, Furukawa, Joshi, Kralovec, Mostashari, Worzala, & Jha, 2013; Ortiz, Bushy, Zhou, & Zhang, 2013). This may be large in part that rural hospitals are not participating in the CJR and ACO programs. The large number of covered lives enables the ACO to have the payment base to manage the sick patients who seek care within the ACO. Based on the population size in rural areas, hospitals in rural areas may struggle to participate in the ACO program, unless they do so

through a partnership with a larger entity. At the time, there are very few incentives to do that. They are still able to operate in a fee for service payment system without very many penalties. If policy makers want to fully implement the value based payment incentives outlined in the ACA, they need to understand the organizational and market environments that rural hospitals operate within and create programs with obtainable and fair evaluative criteria that is obtainable and fair.

While most of our findings confirm previous research in the field of healthcare strategy, our research also provides a unique perspective on how organizations make decisions regarding their SAC strategy. Our study was able to provide insight into the complex nature of hospital strategy. Organizations looking to expand the continuum of care to include SAC are doing so in response to value based payment incentives. Their likelihood of adapting to these new payment incentives is a result of the demand for SAC services in their market and also the organizational resources. Through the cross case analysis was able to shed light on the relationships between these factors and the realities of strategic decision making that healthcare administrators face.

Despite the valuable contributions of our research, our study has several limitations. First, both our case study approach and our selection of the cases creates limitations regarding the generalizability of the study. This is a limitation of cross case study design (Hodkinson, & Hodkinson, 2001). Next, the small number of participants per case may influence our findings. Although we interviewed individuals that were self-identified as being a part of the decision making process as it relates to hospital strategy, our study could be enriched by gaining alternative perspectives. In addition, we were not able to interview every decision maker in the organization. This was not feasible given

our timeline and resources available to collect the data. Third, each of interviewees worked at the system level of the organization. We did not conduct interviews at the hospital level to confirm the findings. This may limit the perspectives we were able to capture in our findings. Lastly, we were unable to collect observations in the natural setting, limiting our ability to confirm the findings we found during the interviews and collect richer data.

Further research is needed to explore hospitals' SAC strategies. First, we noted that, among our cases, there was variation in the role that the ACO and bundled payment programs played in SAC strategy adoption. Further studies are needed to examine whether or not ACOs and bundled payment programs play a potential mediating or moderating role in SAC strategy adoption. Next, each case documented that they have adopted a network approach in place of a vertical integration strategy. Further research is needed to understand how hospitals develop networks, the characteristics of SAC networks, how they evaluate their networks, and the outcomes patients experience as a result of these networks. This topic emerged as a result of the cross case analysis and each case described a complex process. A mixed methods approach would enable researchers to explain these initial results and gain additional insights into the process and organizational strategy (Creswell & Plano-Clark, 2011).

## Conclusion

Our findings provide insight into the strategic management behavior of health systems vertical integration into SAC. The findings highlight the unique intrinsic thought processes that healthcare administrators go through to determine the correct strategic approach to managing patients who move from acute care to SAC. As health systems

continue to adopt value based payment systems, the demand for integrated SAC providers will grow. Healthcare administrators face significant barriers from their environments as they try to position their organizations to most appropriately respond to these changes while meeting their organization's mission.

Figure 1

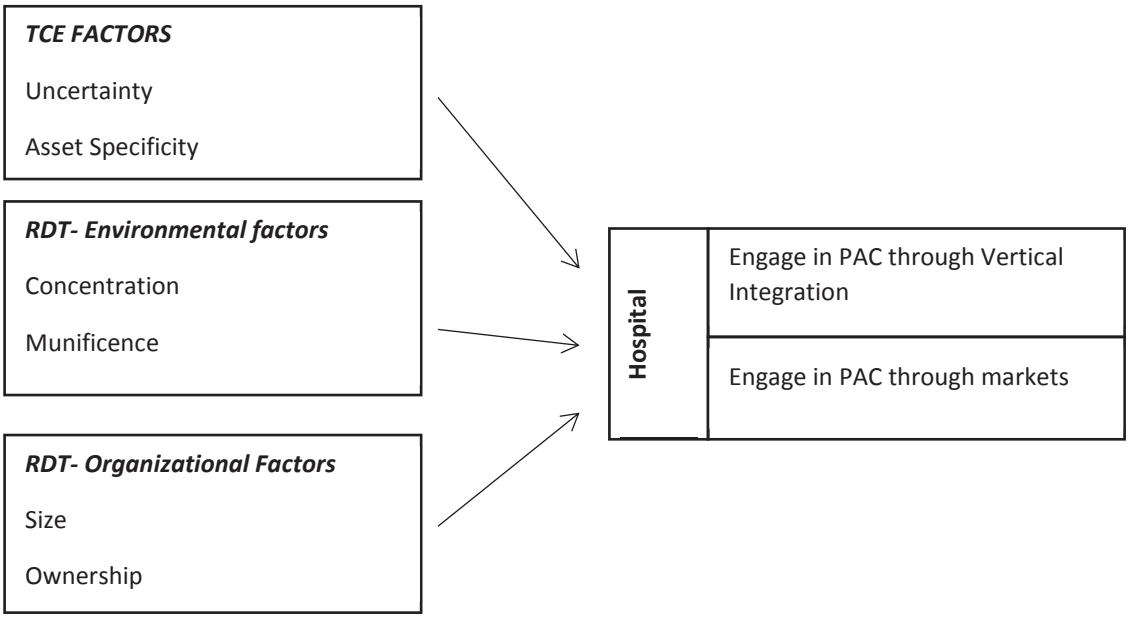


Figure 1, Relationship between vertical integration and RDT and TCE

# APPENDIX A

**Interview questions for Introduction**

Hello, Mr./Mrs./Ms./Dr. _____? My name is _____, and I am a PHD student at the University of Alabama at Birmingham. Thank you for taking the time to talk with me today. I am conducting a study to better understand hospital vertical integration into skilled nursing facilities. I am especially interested in why organizations adopt a vertical integration strategy and whether or not vertically integrated sub-acute care facilities are associated with improved organizational performance. The information you provide may be beneficial in helping understand what hospital sub-acute care strategies can be effective and why. **This study and this interview have been approved by the University of Alabama at Birmingham Institutional Review Board.**

**All your answers are completely confidential and you do not have to answer any question you do not wish to answer. This interview may be recorded unless you request otherwise. Audio files will be transcribed in their entirety for review by the researchers involved with this study. We will not use anything you say without your permission and will never use your name. Please be assured that your identity will be confidential and all interview information will be reported in aggregate. This interview may take approximately 45-60 minutes. Your participation in this interview is voluntary. If you should decide to withdraw from the study at any time, please notify us and we will immediately delete any information about you from the study. You may reach me at 860-933-6251 or toryh@uab.edu**

Do you have any questions?

Do you wish to participate?

If on a call:
If you need more time to decide I can call back later at a time convenient to you. (If YES, I will proceed with questions. If NO, I will thank the participant for his/her time and for speaking with me. If YES, but not right now: Please let me know the best date and time to call back for the interview.)

Thank you for agreeing to participate. Are you ready to start?

**Icebreaking Questions**

**Icebreaker 1**: Tell me a little bit about your organization.
Probe 1: What type of markets or hospital types do you focus on?
Probe 2: What distinguishes your organization from competitors

**Ice Breaker 2:** Can you tell me about your role in your organization.

Probe 1: Please describe your duties and responsibilities.

The next set of question will focus on your organization's strategy toward managing patients that move from acute care to skilled nursing facilities.

**Sub-Acute Care strategy: The next few questions**

**Q1: Upon reviewing your organization's website I noticed that you have _____.Tell me about how your organizations adopted this strategy for sub-acute care.**

Probe 1: Of the strategies you have adopted, which have been most effective in dealing with patients that transfer to sub-acute care.
Probe 2: Are there any strategies for sub-acute care that are not on the website? (ie-networks, joint ventures)

**Q2: Tell me about why your organization has adopted a certain Sub-acute care strategy over another. What factors influence the decision to go in one direction over another?**

Probe 1: How does the competitive nature of a hospitals market place influence the strategy you adopt?
Probe 2: What about the competitive nature of the skilled nursing facility influence the strategy you adopt?
Probe 3: How does the location of a hospital (in an urban or rural market) influence the strategy you adopt?
Probe 4: How does the population of Medicare eligible influence the strategy you adopt?
Probe 5: How does the hospitals availability of resources influence the strategy you adopt?
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**Sub-acute care strategy and organizational performance**

Q3: Let's talk about your organization's ability to manage the quality of care of patients that transition to sub-acute care.

Probe 1: What type of readmissions of patients are you most concerned with?
Probe 2: How do you measure your quality of care of patients that transition?
Probe 2: How do you think your quality in this area of care in this area of care impacts your organizations financial performance?

**Q4** Let's talk about the **organizational performance** of your hospitals that adopt a Sub-acute care strategy?

Probe 1: Financial (revenues, Operating Margin)

Probe 2: Quality performance (quality of care, clinical indicators, 30 day readmissions)
Probe 3: How do you balance the competing goals of meeting financial goals and maintaining quality?
Probe 4: How do you think your facilities performs relative to competitors? (Quality, patient experience, Financial Performance)

Closing question and “thank you” remarks? Also ask for the opportunity for the follow-up email or phone conversation in case you need to clarify some info.

# APPENDIX B

*Titles of Participants*

| **Case** | **Interview 1** | **Interview 2** | **Interview 3** | **Interview 4** |
|---|---|---|---|---|
| Case 1 | Chief Executive Officer, Rehabilitation Hospital & Health System Market Leader for Post-Acute Care | Chief Financial Officer | Vice President of Orthopedic, Neuroscience and Spine | |
| Case 2 | Chief Strategy Officer | President and Chief Executive Officer of Clinically Integrated Network | Strategy Director | |
| Case 3 | Chief Executive Officer | Chief Operating Officer | Senior Vice President, Quality, Patient Safety and Care Management | Vice President, Clinical Services Post-Acute Services |

Table 1

*Case Characteristics*

| Regional Health System | Location in US | Ownership Status | System Affiliation | Location | | Size | |
|---|---|---|---|---|---|---|---|
| | | | | Urban | Rural | <200 | >200 |
| Case 1 | West | Investor | X | X | | X | X |
| Case 2 | Mid West | NFP | X | X | X | X | X |
| Case 3 | Throughout US | NFP | | | X | X | |

Table Two

*Case 1 Themes*

| Case 1 Theme | Sub-Theme | Quotes |
|---|---|---|
| ***Value Based Payment Incentives*** | *Responding to Demands of Bundled Payments* | "The CJR [Comprehensive Care for Joint Replacement Model; CTH] allowed for that to happen for the first time. So really the way that we managed it was looking at the only quality piece that we could get our hands on, and that was if we sent something to Tori's rehab Skilled Nursing, and you re-admitted them back to us, we could know what your re-admission rate was, if you re-admitted them back to us and that's how we would manage. Other than that, there really not a lot incentive to manage the network at all." |
| | | "Yeah, I love the way that CMS changed the CJR [Comprehensive Care for Joint Replacement Model: CTH] law. Basically we're the only ones at risk. Physicians aren't going to sign a risk contract, and for the skilled nursing facilities, really, they're incentive is to be on our preferred provider network list so that they can get more referrals, but at the end of the day, there's a penalty because the episode set was too high, the hospitals are the ones on the hook. CMS allows you to cost share, and to have upside and downside with a certain group of people that are involved in this." |
| | *Dealing with Changing Medicare Payment Incentives* | "They have good quality programs today. A lot of what we're taking about, a lot of the change that CMS is wanting to drive is a change more around the culture of practice. Total majority patients, I would say no more than ten per cent need skilled nursing." |
| | | "At the same time from a macro standpoint for that hospital, we don't want our readmission rate to be anywhere near what a XXXX[Competitors name; CTH] readmission rate is. We have to be very selective that we're taking patients that are appropriate to us. They're not too high functioning or somebody that doesn't really need our level of care, but also that we're not going to be sending the patient right back to them. Yeah, it definitely takes a balance of evaluating from a business standpoint of making sure you have enough critical mass to keep running, but at the same time, it's a very short-sighted gain to just admit patients that are not going to have a good quality outcome." |

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| | | "If we look at the way healthcare reform is going, though, in the importance of sending your patients from a bundling standpoint, sending them from an acute care setting ideally back home where there's no post-acute services needed, that's kind of the gold standard for the organization. Gold standard for my hospital, as well." |
| | *Reducing Hospital Readmissions Rates* | "Yeah, we look at all our re-admissions, but we obviously pay, and every hospital pays closest attention to the ones that are attached to a penalty." |
| | | "A lot of this stuff is tough to measure but re-admissions is how we measure it primarily." |
| | *Reducing Length of Stay* | "We're at risk for the length of stay so if a patient stays an extra few days in a hospital in order for them to avoid some sort of step-down and go straight to home health, they are going to do everything they can to make that happen." |
| | | "We're just utilizing them [our resourced] better, so some of that comes to a reduced length of stay ... Better utilization of the existing beds that we have. " |
| | | |
| ***Market Factors*** | *Population Changes* | "[They; CTH] identified rehab as an enormous opportunity of growth for the company, and specifically within the company in the Denver market, our Swedish location, really had the patient population mix, the service lines that would support a good rehab program. Overnight essentially, the idea was really agreed upon that we would start branching back out into rehab and starting to put new units back into existing hospitals that may or may not have at one time had them. It quickly became the second fastest growing service line within the company." |
| | *SAC Market Competition/Availability* | "Yeah, so you think about that, there's 29 facilities, and that's just five-star. That's not including the four-star which is a breath away. I think when I look at that, it went from like 29 to 54. When you start thinking about 54 4 or 5 star facilities, in an MSA of about 2.5 million people, that's pretty strong." |

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| | | "It's [Sub-Acute Care; CTH] incredibly competitive. It's competitive in the sense that you have, again, you have a lot of convenient locations for patients to choose from, physicians that are financially motivated to refer patients to their own sub-acute type setting..." |
| | | "The landscape's competitive for convenience, it's competitive with physicians who have financial incentive to refer patients, it's competitive even among the businesses that don't have physicians of just survival, trying to make sure the distinguishing characteristics of each level of care is identified,of each specific facility within the same sub-sector is identified. It's definitely competitive" |
| | | |
| *Organizational Factors* | *Appropriate Organizational Knowledge* | "For us, we have a free-standing rehab hospital here, and outside of that, we really don't own anything in that post-acute care provider world, so for us it's really ... We're a hospital business. That's what we do." |
| | *Complimentary Acute Care Services* | "[What; CTH] that he did that really identified rehab as an enormous opportunity of growth for the company, and specifically within the company in the XXXXX [City name; CTH] market, our XXXXX [Hospital name; CTH] location, really had the patient population mix, the service lines that would support a good rehab program. Overnight essentially, the idea was really agreed upon that we would start branching back out into rehab and starting to put new units back into existing hospitals that may or may not have at one time had them. It quickly became the second fastest growing service line within the company." |

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| | *Availability of Financial Resources* | "Of course, right now, aside from the readmission, we get absolutely no reward for that but, again, you have to go down those roads even though there's no, right now, there doesn't seem to be any financial reward for it because you've got to remember your goal. You're supposed to be keeping people healthy, helping people." |
| | *Potential Strategic Alternatives* | "Yeah, you know for me, it's really about trying to pick the right partners. I don't think ... We're not in the business of wanting to own everything, and I don't know that that's a very smart strategy to employ, personally." |
| | | "I don't know that we want to get into the ownership business, so it's really looking ... Who are the right partners to bring to the table? " |

Table 3
*Case 2 Themes*

| **Case 2 Theme** | **Sub-Theme** | **Quotes** |
|---|---|---|
| ***Value Based Purchasing*** | *Implementing Accountable Care Organizations* | " I think there's a lot of work yet to be done to educate the care managers on work in a clinically integrated network (ACO), how it benefits them." |
| | | "...post-discharge isn't something that we've really focused on in general and so those transitions of care are where the ball gets dropped and that can lead to adverse events. Poor outcomes for patients even when they're not adverse advents, safety concerns with medication and all these other things, so trying to iron out those pathways and create predictable outcomes for patients. Where we are at risk for things like shared savings programs or the ACO and being able to take those to market as those arrangements are expanded by CMS and other payers." |
| | | "ACO is a technical term for some programs out of medicare, but the CIN is the network that administers the ACO. As we were looking at managing that spend, about a third breaks down to hospital/inpatient, about a third breaks down to the physicians and about a third breaks down to post-acute. " |
| | *Responding to demands of bundled payment programs* | "I think bundled payments have influenced us greatly. I think it really has driven how we're going to do, or at least beginning to get us organized around how we work with post-acute. Up until this point, I don't think we much had a strategy." |
| | | " This is related to the bundle payment program for joints and we're participating in that and have had great success there lowering readmission rates, lowering length of stay. Even they're lowering the utilization of the skilled facilities and getting folks out and back home faster." |

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| | *Dealing with changing Medicare payment incentives* | "We probably looked at Kentucky fairly homogeneously, and looked at Medicare cost of state, taking the ACO bundle payment, post-acute network strategy through our Medicare fee-for-service patients that have cooperation within their current Advantage plans, and whatever programs they've got." |
| | | What's happening is we're working with Medicare. Again, things that we've found as we went through the program, that if you send a patient home with home care, you get penalized. If you send the patient without home care, you don't get penalized. |
| | | "That's why we budgeted the same number for SNF. If they weren't going to go to in-patient rehab, we thought the SNF base would actually go up. The other thing that we're finding is Medicare, God bless them, they're learning with us as we go here. Medicare has a penalty for too short of a length of stay." |
| | | Just that organizations have to be creative about how they approach this section [SAC] of the market and then figure it out as they go along, these are skill sets that we don't currently have that need to figure out because these payment models aren't going away. |
| | *Reducing hospital readmissions rates* | "we pay closest attention to our readmissions rates and keep track of them with each sub-acute care provider |
| | | "It could be length of stay and readmission, so again, it may be, "Hey my length of stay went down, but my readmission rates went up." I'm back to our bundle payments program here, our readmission rates went from 16% down to 8%." |
| | *Reducing hospital length of stay* | "It was 9 months of information. We had 941 cases. The average hospital length of stay was 2.3 days versus a year ago it was 4.5 days." |
| | | "This is related to the bundle payment program for joints and we're participating in that and have had great success there lowering admission rates, lowering length of stay. Even they're lowering the utilization of the skilled facilities and getting folks out and back home faster." |
| | | "I told you about the length of stay in the nursing homes, it was up around 20 days was the average length of stay. I think we budgeted 15. It got down to like 7 or 8 in the first months. It was really, really down there" |

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| ***Market Factors*** | *Anticipating population changes* | [In response to asking what factors influenced the health system decision to vertically integrate SAC in a specific hospital location; CTH] "I think they've got a lot of orthopedic. I think it's such a fast-growing community, relative to its size, that they see that as a real opportunity to do something for the community that's maybe not as developed as it could be." |
| | *Responding to SAC Market Competition* | We looked at discharges and for our downtown medical campus, one of those facilities in any given year we had over ... Discharges to over 100 skilled nursing facilities and that kind of variation creates uncertainty |
| | | "...the presence of XXXXXXX[SAC Company name; CTH], XXXXXX [SAC Company name; CTH] basically large subacute, post-acute providers, I think that added, just figuring we're better off working with the folks that are here than trying to create our own." |
| | *geographic location of acute care center* | "The other main areas would be population centers would be XXXXXX Community and XXXXXX community, but there's only a few facilities in each of those areas and then when you're talking about the critical access hospitals, that population is much more spread out and so your ability to say to somebody, who wants to drive 2 counties over to go to the skilled nursing home and actually doesn't have access to transportation, that's a whole different set of issues." |
| | | |
| ***Organizational Factors*** | *Organizational Knowledge* | "I think probably the driving factor of it is lack of just a knowledge of that area and a lack of capital to enact an acquisition strategy. I think third, the presence of Signature, Kindred, basically large subacute, post-acute providers, I think that added, just figuring we're better off working with the folks that are here than trying to create our own." |
| | | ...lack of expertise in the area...I think, make it prohibitive [to vertically integrate; CTH] |

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| | *Complimentary Acute Care Services* | "I think [the health system decided to vertically integrate SAC at this location because] they've got a lot of orthopedic. It's such a fast-growing community, relative to its size, that they see [integration] as a real opportunity to do something for the community that's maybe not as developed as it could be." |
| | | "Yeah, then our facility in XXXXXXX [hospital; CTH] has a skilled nursing unit in it. Which we opened up as a dual part of this strategy because it made sense with the type of patients and services they focus on in that facility" |
| | *Financial Resources* | "Limited capital availability...I think, make it prohibitive [to vertically integrate; CTH]" |
| | | "...with limited resources, do you want to spend 10 million dollars acquiring a skilled nursing facility when that aspect of the continuum is getting squeezed and they're having all sorts of margin pressures, or would you rather invest and grow somewhere else and get those outcomes through a more creative partnership where you don't have to put financial skin in the game." |
| | *Strategic Alternatives* | "We've got 50 of them in our network. Now, I don't think people thought we were serious, so we brought the nursing homes together and almost all of them in the region would come to the meeting. A lot of them would fill out the 20 page application we asked them to fill. It required an onsite visit also. We signed up, we've got almost 50 of them now. Now, other nursing homes are coming to us saying, "When are you going to go through the second cycle because we're upping our 3 star scores and we want to apply. We want to be a part of it. Not that we're going to get a whole bunch of hip and knee cases from you, we just don't want to not be on your list." |
| | | "I think the current strategy is to build it into the clinically integrated network into basically certified post-acute and subacute providers to incorporate them in the bundle payment strategy with EMS. I don't think there's a plan to acquire or expand ownership of it, financial ownership. There may be a vertical integration strategy through clinical alliance." |

Table 4
*Case 3 Themes*

| **Case 3 Theme** | **Sub-Theme** | **Illustrative Quotes** |
|---|---|---|
| ***Value Based Payment Incentives*** | *Implementing Accountable Care Organizations* | "I think that combination of the pressure from the ACO and the competitive nature, like landscape of healthcare in those communities just create the perfect combination" [to integrate SAC]. |
| | *Reducing Hospital Readmissions Rates* | "It does, it does. I will tell you that, from a re-admission perspective, most of the hospitals internally are beginning to track and monitor re-admission rates from the facility they refer to. That's really all that they have to go on, or those that perhaps, where they've had a new patient stay, it's my hospital and we've transferred out to this SNF that's in the community, are they popping back to us? It doesn't help if they are re-admitted to another hospital, perhaps a larger one, and maybe out of the city or something." |
| | | "A lot of this, I think, work that has become maybe a little more formal and a little more structured with our hospitals and the post-acute providers in their community has everything to do with preventing re-admissions. Because the pay per performance programs have seen this re-admission reduction program is one of those" |
| | | |
| ***Market Factors*** | *Responding to SAC market competition* | "If there's not enough community demand and need for it, or if there's other providers servicing that need or if there is one, then you'll say, "Do we really need to be doing this? Does this make sense?" |
| | *Geographic Location of Acute Care Center* | "One of the strategies that we employ with the secondary market institutions is not just for the subacute settings but certainly for those, particularly the rehab settings, is to create those relationships with the urban community providers, such that they're in a continuity of care that's quote, "Under the umbrella of not a partnership system or a partnered system but sometimes a relationship with an organization where there can be continuity of care." |

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| | | "Obviously many of the smaller communities in which we operate, an acute care hospital, there certainly are nursing home beds, but those are not still beds because none of those nursing homes have the expertise and the ability to move those patients from a still setting into a nursing home setting, but again the expertise to do that, the RN still professional requirements to make that happen are not always available. Consequently, it's reflective of has there been an assertive operator of skilled beds or rehab beds to come into those particular communities and provide those services." |
| | | "...for patients to travel, it's going to be very challenging. It may not be for instance the immediate short term care sites, they have a surgery, but maybe it would be for their sub-acute care or for their rehab and physical therapy. Instead of having them travel back and forth 80 miles for daddy's physical therapy, they can do that in some of the smaller community hospitals that we work with." |
| | *SAC Market Competition/Availability* | "...if there's other providers servicing that need or if there is one, then you'll say, "Do we really need to be doing this? Does this make sense?" |
| | | "Obviously many of the smaller communities in which we operate, an acute care hospital, there certainly are nursing home beds, but those are not still beds because none of those nursing homes have the expertise and the ability to move those patients from an acute care setting into a nursing home setting, but again the expertise to do that, the RN professional requirements to make that happen are not always available. Consequently, it's reflective of has there been an assertive operator of skilled beds or rehab beds to come into those particular communities and provide those services." |
| | | "I would say, generally speaking, that there has been, I think, enough beds in the community from a SNF perspective especially." |
| | | [Some of our hospitals have SAC and Rehab beds because] "It's market demand. Supply and demand. I mean if the market demands it, if you got the capabilities and the skillset from your medical staff, of course in a competitive situation. Really it is unique to these community. It going to be kind of a myriad of factors really." |
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| ***Organizational Factors*** | *Appropriate Organizational Knowledge* | "One of the things that you know, if you think about these small hospitals, these are very finite. Our CEOs, need to focus on what we need to do best, which is hospital care. Then if we could partner with other providers or health systems where it makes sense, then we need to be thinking that way" |
| | | "We can't be anything and be like Baskin-Robbins, you know this 21 plus flavor. We can't try to do everything. We can't partner with other organizations or systems to provide the services that meet the needs of our community and to fulfill our vision. We will just have to own it and to operate it. There's other ways to do this." |
| | | "One of the things that you know, if you think about these small hospitals, these are very finite. Our CEOs, need to focus on what we need to do best, which is hospital care. Then if we could partner with other providers or health systems where it makes sense, then we need to be thinking that way" |
| | *Availability of Financial Resources* | "We try to scope the level of services [SACl; CTH] and support and resources to the needs and financial capabilities of that particular community." |
| | *Potential Strategic Alternatives* | "Some of our general acute hospitals also have swing-bed programs. They're limited, you have to have, I think it's less than 100 beds from the Medicare perspective, to qualify to have swing-beds. Again, our swing-bed programs are robust enough that they not only can use it for their own patients, but they are beginning to attract patients back into the community. Again, those that have had to transfer out to larger hospitals because of medical needs, now can come back into the community, into the swing-bed program, which is better for the patient and family, I think." |
| | | "One of the strategies that we employ with the secondary market institutions is not just for the subacute settings but certainly for those, particularly the rehab settings, is to create those relationships with the urban community providers, such that they're in a continuity of care that's quote, "Under the umbrella of not a partnership system or a partnered system but sometimes a relationship with an organization where there can be continuity of care." |

Table 5
*Cross-Case Results*

| | | Case 3 | Case 2 | Case 1 |
|---|---|---|---|---|
| Value Based Payment Incentives | Reducing Hospital Readmissions Rates | x | x | x |
| | Implementing Accountable Care Organization | x | x | |
| | Responding to Demands of Bundled Payments | | x | X |
| | Dealing with Changing Medicare Payment Incentives | | x | X |
| | Reducing Length of Stay | | x | X |
| Market Factors | Responding to SAC Market Competition | x | x | X |
| | Anticipating Population Changes | | x | X |
| | Geographic Location of Acute Care Center | x | x | |
| | SAC Market Competition/Availability | x | | |
| Organizational Factors | | | | |
| | Appropriate Organizational Knowledge | x | x | X |
| | Potential Strategic Alternatives | x | x | X |
| | Availability of Financial Resources | x | x | X |
| | Aligning Complimentary Acute Care Services | | x | X |

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# CHAPTER 5

# DISCUSSION

This chapter presents a discussion of the findings of this study. This chapter is organized as follows. First, the study findings from Chapter 2, 3 & 4 are discussed. Next, we present three themes that were identified within the research and discuss the next steps. Then, limitations of the research are addressed. Lastly, we discuss the implications this research has for practitioners, policy makers, and researchers.

## Summary of Study Findings

The purpose of this dissertation was to examine the antecedents and outcomes of hospital vertical integration into Sub-Acute Care (SAC). We were interested in understanding hospital vertical integration into SAC. The changes toward a value based payment healthcare payer system made this question an especially timely research issue. The dissertation used a sequential quan→qual mixed methods research design to examine this topic (Creswell & Plano-Clark, 2011). Chapters 2 and 3 reported the quantitative findings of the study and informed the research questions for Chapter 4, which reported on the qualitative findings of the study. This design enabled us to explore a multitude of research questions and sub-questions.

In Chapter 2, we investigated the relationships between organizational and market factors and hospital vertical integration into SAC services. This was part one of the

quantitative phase of research study. The main purpose of this chapter was to tell us what environmental and organizational factors were associated with a hospital being vertically integrated into SAC. The results of this study contribute to our knowledge of how healthcare market and organizational factors relate to hospital vertical integration behavior. In addition, this research was critical in establishing the sample of health systems that we later examined in the qualitative phase of the case study.

The main findings of this chapter suggest that hospital vertical integration is a response to a variety of market characteristics and organizational factors. Specifically, we found that hospitals in rural areas and hospitals in areas with a larger population of Medicare-eligible patient were more likely to be vertically integrated into SAC. The number of skilled nursing facilities in a county was negatively associated with hospital vertical integration into SAC. In addition, there were organizational factors associated with hospital vertical integration into SAC. Hospitals that have swing beds were more likely to be vertically integrated into SAC. Investor-owned hospitals were less likely to be vertically integrated into SAC when compared to not-for-profit and non-federal, governmental owned hospitals. Lastly, hospitals that were affiliated with a health system were less likely to be vertically integrated into SAC. In addition, we found that the years 2009, 2010, and 2012 were associated with an increase in hospitals being vertically integrated into SAC, as compared to 2008.

Research reported in Chapter 2 was a critical component to our overall study because it provided an understanding of what types of organizations are more likely to be vertically integrating into SAC. It informed the second, qualitative phase by revealing what organizational and market factors we should consider when selecting cases. It also

aided in the development of the interview protocol for the semi-structured interviews with health system administrators. As value-based payment systems become more and more prominent and the demand for coordinated SAC increases, it is critical for policy makers and practitioners to understand that not all market and organizational factors are conducive to vertical integration of SAC strategies.

In Chapter 3, we examined the outcomes of hospitals that vertically integrate into SAC services (the second part of the quantitative phase). We argued that vertical integration, as a form of an organizational structure, affects the outcomes of care delivered across the continuum of care and the organizational financial performance. More specifically, hospitals that are vertically integrated into SAC may be better able to manage patient transitions in care and therefore experience better financial and quality outcomes. There has been very little research examining hospital vertical integration into SAC. The results reported in this paper contributed to our knowledge of how hospital vertical integration impacts hospital financial and quality outcomes. In addition, this research was critical in guiding our research questions during the subsequent qualitative phase. It provided a descriptive understanding of the organizational performance expected to be further elaborated on in the qualitative phase of the study.

Our findings from Chapter 3 suggest that hospital vertical integration into SAC is associated with improvement in some hospital performance metrics, but not all. Hospital vertical integration into SAC was associated with improvement in 30-day pneumonia readmissions rates. We found no association between hospital vertical integration into SAC and 30-day heart failure readmission rates and hospital operating margin. Furthermore, we tested whether or not vertical integration among certain hospital types

was associated with improved performance. We found that hospital vertical integration was associated with improvement in 30-day pneumonia readmission rates.

In Chapter 4, we investigated why hospitals adopt a vertical integration into SAC strategy. This chapter reported on the qualitative phase of research study. The main purpose of the qualitative phases to further explain and understand the findings reported in Chapter 2 and 3. To do this, we used a multiple case study design, utilizing the results from Chapter 2 and 3 in the development of our interview protocol and selection of cases. The interview protocol was designed to enable participants to provide a rich description of their perspective regarding their organization's strategy toward SAC.

The findings from Chapter 4 suggest that health systems' adoption of a SAC strategy is in response to a culmination of external environmental and internal organizational factors. Through our case studies, we were able to document that, in addition to vertical integration as a strategy toward SAC, hospitals are also developing formal networks of SAC providers. Within the bigger research purpose of this dissertation, this chapter further explained that hospital vertical integration into SAC is a reaction to the organization's environment. Changes in the payment models and the level of market competition are important factors influencing an organization's ability to adopt a SAC strategy. In addition, the study helped explain that some hospitals may choose alternative strategies that are not as financially risky as vertical integration.

## Findings

This dissertation addressed the topic of hospital vertical integration into SAC. Three papers were prepared as part of a three paper dissertation addressing this research topic. In this section, we will explain how this research addresses this topic as a whole in

three themes. We identify and explain these themes in this chapter. The themes discussed during this section have been identified through the integration of the qualitative and quantitative results from phase one and phase two. Each theme draws on the inferences from both the quantitative and qualitative study phases. During this section we explain each theme.

The first theme identified in our research is *the importance of rural hospital strategic practices.* Hospital location was a significant factor in how organizations adopt a strategy toward SAC. We identified clear differences between rural and urban hospitals as it pertains to an organization adopting a vertical integration into SAC strategy. We found that hospitals in rural areas are more likely to be vertically integrated into SAC, in part in response to the availability of these services for their patient population. That is, rural hospitals may vertically integrate into SAC to ensure that their patients have a SAC facility in the area. Otherwise, the SAC facility may close, leaving rural communities without access to SAC services. Through vertical integration, rural hospitals are able to ensure their communities with continue to have access to SAC services.

When considering these findings, we cannot ignore the fact that organizations in resource-rich environments may have more strategic options for handling patients that move from acute care to SAC. They may have access to a more competitive SAC provider market and, as a result, they may employ alternatives to vertical integration (e.g., networks) and still ensure that their patients have access to SAC providers. In contrast, rural hospitals, which operate in resource-poor environments, may not operate in a competitive SAC market and may adopt a vertical integration strategy to better control the few SAC resources that do exist in the market. This theme is consistent with previous

literature that has suggested that hospitals in rural areas respond differently to environmental pressures in comparison to urban hospitals (Mick, Morlock, Salkever, & de Lissovoy, 1993). Research has documented that hospitals in rural areas face scarcity of services and providers (Davidson & Moscovice, 2003). Our study findings contradicted previous research that found that rural hospitals were less likely to vertically integrate and merge (Trinh & O'Connor, 2000). In light of previous literature, the findings of this research suggest that rural hospitals are responding to the changes in the ACA through vertical integration. Vertical integration may be a better strategy for hospitals that operate in resource-poor environments.

The second theme identified during this research was *the importance of organizational knowledge of SAC services.* This theme describes how the decision to vertically integrate into SAC and the ability for an organization to be successful upon vertically integrating is associated with the organization's knowledge and experience providing SAC services. Successfully vertical integrating into SAC requires hospitals to be able to provide and care for patients as they rehabilitate and recover. Hospital administrators identify that SAC is a unique part of the care continuum and requires institutional knowledge that goes beyond acute care. Hospitals that already have swing beds or have complimentary service lines (e.g., orthopedics) may have a better understanding of how to best provide SAC services. Additionally, hospitals that already have swing beds or complimentary service lines may view vertical integration into SAC as a way to leverage their capabilities and take advantage of obvious organizational interdependencies.

The third theme we identified was the *limited understanding of organizational performance of vertically integrated hospitals*. Our research highlighted that the field knows relatively little about how organizational structure influences patients who transition from acute care to SAC. We made the assumption that hospitals that vertically integrate into SAC were better able to manage the processes associated with improved outcomes for these patients. One major weakness in our study is that we failed to explicitly address this relationship. Our failure to address this relationship makes it difficult to draw conclusions regarding why or how vertical integration may or may not impact patient quality outcomes and reduce cost. For example, while our research found the vertical integration was associated with improvement in pneumonia 30-day readmission rates, there were no significant findings when examining 30-day heart failure readmissions. Furthermore, hospital administrators noted that vertical integration is one strategy that organizations adopt in response to the pressure to improve quality outcomes. Our findings lead us to ask more questions regarding why vertically integrated organizations improve outcomes of some diseases, but not for others.

The fourth theme is *Organizational Alignment with value based payment incentives.* This theme describes how organizations are adopting strategies which enable them to best operate within a value based payment system. Through the ACA, CMS is aligning healthcare quality with reimbursement. Hospital's ability to receive the full reimbursement is linked to patient outcomes throughout the continuum of care. Our study results suggest that hospitals are adopting strategies that position themselves to take advantage of these reimbursement structures. The quantitative findings from our study suggest a relationship between adopting a vertical integration strategy and 30 day

pneumonia readmissions. During our qualitative phase we learned that hospital administrators are concerned with their readmission rates and are focused on strategies that will reduce these rates. We found that organizations in more competitive markets are more likely to focus on aligning their organization to take advantage of value based payment incentives.

There is a significant amount of work to do in this program of research. The next steps are to further explore the integrated results. Our integrated results reveal a number of factors which influence how organizations respond strategically to the current demands of the healthcare market. We will continue to explore these issues and seek to provide policy makers and healthcare administrators with a better understanding of hospital vertical integration into SAC.

## Limitations

Despite the contributions of this research, there are limitations to note. This section will focus on the limitations of the study as a whole.

The first limitation is based on the choice of variables during the quantitative phase of the study. During the first phase we only focused on certain factors. TCE and RDT guided the choice of variables, however, theories do not explain all possible factors. As a result we may have overlooked other important factors that contribute to hospital SAC strategy.

Next, during the qualitative phase of the study, we were unable to explore why some hospitals experience better financial outcomes or patient quality outcomes as a result of hospital vertical integration. Unfortunately, while conducting our data

collection, the interviewees were unable to address these questions in enough detail to report the findings. In order to address this issue, our participant list should have included more health administrators who could address these questions. Some of these participant roles could have included the Chief Operating Officer or Chief Quality Officer of hospitals that were vertically integrated or hospitals with service lines that tracked these metrics closely (for example, large stroke units). The majority of the healthcare administrators we interviewed worked in strategy. Upon conducting our case study, we realized that the strategy healthcare executives we interviewed did not have access to the quality outcomes data that would enable them to address these research questions. This limits our ability to understand and explore our research purpose in full detail. In addition, we were not able to conduct site observations as a part of the qualitative phase of the study. Direct site observations may have increased our understanding of hospital SAC strategy and provided more context to our study (Yin, 2014).

Lastly, data from the two phases of the study are from different time periods. We were unable to completely link the time periods for the two phases of the study. The data from the quantitative phase is for the years 2008-2012. During the qualitative phase of the study, we collected data regarding the current events of the organization (2015 & 2016). Most of the interviewees were not in their current roles during the period in which we had data that we could use in the quantitative phase.

## Implications

In this section, we will address the implications this study has for practitioners, policy makers, and the research community.

### *Implications for Practitioners*

This study imparts a better understanding of the organizational and market factors that correlate with vertical integration into SAC. This information enables hospital leaders to more successfully understand their own environment. A better understanding of what these factors are will enable hospital and health system leaders to better scan their environment, collect data about their environment, and respond more in a more appropriate and timely manner. In addition, our study provides insight that that not all market and organizational factors are conducive with a vertical integration into SAC strategy. This is critical for hospital administrators to understand as they continue to respond to the new pressures from the Affordable Care Act (ACA). Healthcare administrators face mounting pressure to be a part of and provide care within an integrated delivery system. The fact that we did not find significant positive effects for vertical integration and organizational performance gives practitioners evidence that they should not enter into a vertically integrated SAC strategy without carefully considering all potential strategies. Organizations must balance their own capabilities with the market pressures.

Next, our study provides significant insight into the ways in which healthcare leaders are responding strategically to new value-based payment systems established during the ACA. For practitioners, documenting these findings helps affirm behaviors they may already be exhibiting and also provides them with a better understanding of how their peers may be responding. Our study also highlights some outcomes hospitals administrators should expect if a vertical integration into SAC strategy is adopted. With

the exception of investor-owned hospitals, we found no significant association between vertical integration and improved financial performance. This does not mean that all administrators should ignore vertical integration as a potential strategy; rather, they may want to adjust their future strategic plans to be in line with these outcomes. This study enables healthcare administrators to better forecast and plan for the future should they adopt a vertical integration into SAC strategy.

### *Implications for Policy Makers*

The first major significant finding of which policy makers should take note if that hospital vertical integration varied by community and organizational type. Hospitals in resource-scarce markets respond differently to the pressures to integrate SAC into the care continuum. Our research found that hospitals in rural areas were more likely to be vertically integrated into SAC. Meanwhile, amongst rural hospitals, there was no significant relationship between being vertically integrated and improved hospital financial performance or patient quality outcomes. During the qualitative phase of the study, interviewees from rural hospitals noted that a vertical integration strategy was adopted in response to a lack of availability of SAC services in their market. Policy makers could look at these results as a whole and understand that rural hospitals that vertically integrated are not doing it in an effort to improve their patient outcomes or better manage the acute care to SAC patient transitions. Instead, they are doing it to ensure their patients have access to these services. As a result, policy makers may not be able to expect that hospitals in rural areas are better able to manage patient transitions in care. The fact that hospital vertical integration into SAC does not improve financial outcomes for rural hospitals means that policy makers should be more cognizant that

these hospitals may be facing significant financial restraints, and vertical integration may not be improving this financial position. In the short run, this may not have a significant impact on rural hospitals' ability to meet the healthcare needs of their community. Over time, though, rural hospitals may not be able to adapt to the demands of their market and face financial hardship as a result of these types of strategic decisions.

Next, a significant finding of our study was that hospitals may be adopting strategic alternatives to vertical integration. During the qualitative phase of our study, participants from each case noted that their organizations were adopting a network approach as part of their strategy to manage patients that transition from acute care to SAC. Each organization coupled vertical integration with a network approach as a result of limited capital, the presence of a competitive SAC market, and a lack of organizational knowledge surrounding SAC services. Policy makers should ensure that they establish a Medicare and Medicaid regulatory environment that is conducive to these organizational relationships.

Lastly, all policy makers should be aware that there is significant variation in how organizations are integrating across the care continuum. These gaps may further divide communities along socioeconomic lines and have a negative impact on patients' care. It is too early to understand if this is happening. Policy makers should continue to monitor the organizational structures that are more conducive to the outcomes they are hoping to experience as a result of the ACA.

### *Implications for Research*

This dissertation study establishes a foundation for understanding the types of hospitals and markets that are vertically integrated into SAC and what outcomes are

associated with hospital vertical integration. Through this study, it was clear that there is a need for more consistent definitions and terminology relating to the types of healthcare organizational structures. In order to do this, future research should focus on a comprehensive literature review that examines the state of vertical integration in health care management literature.

Next, our study highlighted the limited empirical understanding of how organizational integration structures impact patient processes and patient outcomes. Our study assumed hospitals that were vertically integrated would be able to better manage patient outcomes. Based on TCE theory, by owning the SAC facility, hospitals would have a vested interest in ensuring patients are cared for in a way that improves quality and cost. Future research should examine the relationship between vertical integration into SAC and patient transitions in care programs. This research should focus on understanding if ownership structures (as a form of organizational structure) impacts an organization's ability to implement and improve patient management during risky transitions from acute care to SAC. Researchers may also wish to study the programs that ensure high quality outcomes while at a SAC facility.

Lastly, our study revealed that, in addition to vertical integration strategies, organizations are adopting network strategies in order to manage patients. Future research should focus on the relationship between hospital network development and SAC outcomes. Research should also focus on the market and organizational factors that are associated with a network approach to this part of the care continuum.

## Conclusion

We have a significant healthcare spending problem in the United States. On top of this spending problem, there are major gaps in quality and outcomes. Healthcare researchers have blamed healthcare financing crisis and gaps in quality on problems with care coordination throughout the continuum of care. Care coordination and improved care delivery are considered two potential areas that can help reduce spending (Berwick & Hackbarth, 2012). This study attempted to gain a better understanding of how organizations adopt strategies to create coordinated care systems, and how these strategies impact quality and reduce cost.

Our study highlights the variation in adoption of SAC vertical integration strategies across market and organizational types. It also demonstrates that hospital vertical integration into SAC does not impact every hospital outcome measure the same way. Hospital vertical integration into SAC was associated with improvements in 30-day pneumonia readmissions rates, but there was no relationship between hospital vertical integration into SAC and 30-day heart failure readmission rates. Given the financial emphasis placed on hospital readmissions through the Hospital Readmissions and Reduction Program, we must continue to investigate why organizational ownership structures do not impact each patient quality outcome in a positive way. Hospitals are desperate to address these gaps in care and improve their patient quality outcomes.

# REFERENCES


Mick, S. S., Morlock, L. L., Salkever, D., & de Lissovoy, G. (1993). Rural hospital administrators and strategic management activities. *Journal of Healthcare Management*, *38*(3), 329.

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Creswell, J.W. & Plano-Clark, V.L. (2011). *Designing and conducting mixed methods research*. (2nd ed.) Thousand Oaks, CA: Sage Publishing.



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# APPENDIX

THE UNIVERSITY OF ALABAMA AT BIRMINGHAM

Institutional Review Board for Human Use

Exemption Designation
Identification and Certification of Research
Projects Involving Human Subjects

UAB's Institutional Review Boards for Human Use (IRBs) have an approved Federalwide Assurance with the Office for Human Research Protections (OHRP). The Assurance number is FWA00005960 and it expires on January 24, 2017. The UAB IRBs are also in compliance with 21 CFR Parts 50 and 56.

| | |
|---|---|
| Principal Investigator: | HARPER, CAROLYN TORY |
| Co-Investigator(s): | |
| Protocol Number: | **E151019007** |
| Protocol Title: | *Hospital Vertical Integration of Sub Acute Care Services* |

The above project was reviewed on 11/16/15. The review was conducted in accordance with UAB's Assurance of Compliance approved by the Department of Health and Human Services. This project qualifies as an exemption as defined in 45CFR46.101(b), paragraph 4.

This project received EXEMPT review.

Date IRB Designation Issued: 11/16/15

Cari Oliver, CIP
Assistant Director, Office of the
Institutional Review Board for Human
Use (IRB)

Investigators please note:

Any modifications in the study methodology, protocol and/or consent form/information sheet must be submitted for review to the IRB prior to implementation.

470 Administration Building
701 20th Street South
205.934.3789
Fax 205.934.1301
irb@uab.edu

The University of
Alabama at Birmingham
Mailing Address:
AB 470
1720 2ND AVE S
BIRMINGHAM AL 35294-0104

## EXEMPTION CHECKLIST (OIRB Use Only)

Principal Investigator: Hogan, Carolyn
Contact Person: _____
Faculty Advisor: Lerak, Christy
Sponsor: _____
OSP Proposal # _____

IRB Protocol #: E15104007
Phone: 860-933-6251 ☐ IRAP Created
Training Complete ☑ Needed for: _____

☐ Funding App ☐ Subcontract ☐ MTA ☐ CDA ☐ DUA ☐ FFS

| | | |
|---|---|---|
| 1. Research no more than minimal risk? | ☑ Yes | ☐ No |
| 2. Adequate provisions to maintain privacy and confidentiality? | ☑ Yes | ☐ No |
| 3. Prisoners are not participants? | ☑ Yes | ☐ No |
| 4. Research does not include deception? | ☑ Yes | ☐ No |
| 5. With the exception of Cat 6, the research is not subject to FDA regulations? | ☑ Yes | ☐ No |

**Category 1** ☐

| | | |
|---|---|---|
| 1. Commonly established educational setting? | ☐ Yes | ☐ No |
| 2. Normal educational practices? | ☐ Yes | ☐ No |

**Category 2** ☑

| | | |
|---|---|---|
| 1. Test/Survey/Interview/Observation? | ☑ Yes | ☐ No |
| 2. Adult participants only or observations of minors in a public setting where the investigator does not participate in the activity being observed? | ☑ Yes | ☐ No |
| 3. Is information recorded anonymously or if obtaining identifiers, is the information obtained such that accidental disclosure will not place the subject at risk if disclosed? | ☑ Yes | ☐ No |

**Category 3** ☐

| | | |
|---|---|---|
| 1. Test/Survey/Interview/Observation? | ☐ Yes | ☐ No |
| 2. Use of Elected or appointed officials? | ☐ Yes | ☐ No |

**Category 4** ☑

| | | |
|---|---|---|
| 1. Collection or study of existing data? | ☑ Yes | ☐ No |
| 2. No identifying information *recorded* by investigator? | ☑ Yes | ☐ No |

**Category 5** ☐

| | | |
|---|---|---|
| 1. Evaluation of public benefit or service program? | ☐ Yes | ☐ No |
| 2. Conducted by or subject to agency approval? | ☐ Yes | ☐ No |

**Category 6** ☐

| | | |
|---|---|---|
| 1. Evaluation of taste and food quality? | ☐ Yes | ☐ No |

Consent Elements (minimum
- Title of the study
- Statement of research
- Purpose and procedures
- Approximate time of participation
- Participation is voluntary
- Confidentiality
- Risks, benefits, alternatives, employee language as needed
- PI contact info
- UAB IRB contact info from Sample Consent

**NOTE: If any answer is NO, then the project does not qualify for Exempt Review**

☑ PORF or CTRC ☐ Titles Match – ☐ Grant/Sponsor Protocol ☐ HSP ☐ ICF
☐ Waiver of HIPAA Authorization ☐ Consent Process Described _____
☐ FERPA applies ☐ PPRA applies

UAB Sites: ☐ TKC ☐ UAB ☐ CoA ☐ High ☐ EFH ☐ CRU
NonUAB Sites _____ ☐ IRB Approvals/Letters of Support Provided

Attachments:
☐ Data Collection Sheet (Cat 4) ☐ Interview Questions ☐ Surveys/Questionnaires
☐ Recruitment materials ☐ Observations Forms ☐ Other _____

REVIEWED BY Maija DATE 10/30/15 APPROVED BY Maija DATE 11/3/15

**Margaret M Lawson**

| | |
|---|---|
| **From:** | Carolyn T Harper |
| **Sent:** | Tuesday, November 10, 2015 10:37 AM |
| **To:** | Margaret M Lawson |
| **Subject:** | RE: Protocol Number: E151019007 |
| **Attachments:** | Harper's PORF Form Fall 2015.pdf |

Margeret,

Attached is my PORF form. My citi training is also complete but your initial email did not indicate you need me to send you anything about it. Can you see my completion on your end through CITI.

Thanks,
Tory

-------- Original message --------
From: Margaret M Lawson <mlawson@uab.edu>
Date: 11/05/2015 12:38 PM (GMT-05:00)
To: Carolyn T Harper <toryh@uab.edu>
Subject: RE: Protocol Number: E151019007

UAB policy gives each departmental chair responsibility for determining that proper scientific and department approvals have been obtained and that the hypothesis and procedures are consistent with generally accepted scientific principles in the discipline. Therefore, the principal investigator obtains review and approval from the department in which he or she holds a primary appointment. Most departments use the Protocol Oversight Review Form to document this review. Check with Dr. Lemak for your departments specific procedures and signature authorities.

Thanks,

**Margie Lawson| Assistant Director/WIRB Liaison**

**Office of Institutional Review Board**

UAB | The University of Alabama at Birmingham

P: 205.975-3923 | F: 205.934-1301

uab.edu

1

Knowledge that will change your world

---

**From:** Carolyn T Harper
**Sent:** Wednesday, November 04, 2015 3:15 PM
**To:** Margaret M Lawson
**Subject:** RE: Protocol Number: E151019007

Margaret,

Can you clarify the requirements for the PORF form. Does the bottom part need to be signed by my department chair?

Thanks
Tory

---

**From:** Margaret M Lawson
**Sent:** Tuesday, November 03, 2015 4:35 PM
**To:** Carolyn T Harper
**Cc:** Christy Lemak
**Subject:** Protocol Number: E151019007

Hospital Vertical Integration of Sub Acute Care Services

Carolyn,

I am reviewing your exempt application noted above and need the following to complete my review:

1. Provide a completed Protocol Oversight Review Form (PORF).

2. All key research personnel who completed initial human subjects training before January 1, 2015 are required to complete one of the following UAB IRB continuing training courses prior to December 31, 2015. Key research personnel must complete either "IRB Continuing Training (CITI Refresher Course) - Biomedical 2015" or "IRB Continuing Training (CITI Refresher Course) - Social/Behavioral/Educational 2015", as appropriate. Refer to the IRB website at www.uab.edu/irb/training/continuing for information regarding this requirement. This continuing training meets the requirement for the 2015 – 2017 training period.

You can scan the PORF to me via email.

Thanks,

**Margie Lawson| Assistant Director/WIRB Liaison**

**Office of Institutional Review Board**

UAB | The University of Alabama at Birmingham

P: 205.975-3923 | F: 205.934-1301

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Knowledge that will change your world

# IRB Exemption Review Application

- **To complete the form**, click the underlined areas and type or paste in your text; double-click checkboxes to check/uncheck. For more tips, see www.uab.edu/irb/forms.
- **Mail or deliver all materials to AB 470**, 701 20th Street South, Birmingham, AL 35294-0104.

**1. Project Identification**

a. Title of Project: **HOSPITAL VERTICAL INTEGRATION OF SUB ACUTE CARE SERVICES**

OCT 16 2015

b. Principal Investigator (PI):**Carolyn Tory Harper Hogan** PI's BlazerID or E-Mail Address:**toryh@uab.edu**

If the PI is a student, fellow, or resident, provide the name, number, and email of the faculty advisor or course instructor as contact information and obtain the person's signature.
Advisor/Instructor's Name:**Christy Harris Lemak** Telephone Number: **205-934-5665**
BlazerID:**lemak**

17556

Advisor/Instructor's Signature: Christy H Lemak

c. PI's Address (on-campus or home)
On-Campus: Department:**Health Services Administration** Building:**School of Health Professions** Room:_ UAB Zip:**35233**
Phone:**860-933-6251** FAX:_____
-OR-
Home Address:_____ Street:_____ City:_____ State:_____ ZIP:_____
and Campus Affiliation: **Doctoral Student**

d. List all staff who will be involved with the research, their degree(s) and job title, and any additional qualifications. Include individuals who will be involved in the consent process. *Repeat the table below for each individual.*
*Note. For studies involving investigational drugs, include all investigators who will be listed on FDA Form 1572 and attach a copy, if applicable. Send the IRB a copy of Form 1572 anytime you update the form with the FDA.*

| | |
|---|---|
| Role: | ☐Co- -*OR*- ☒Other |
| Full Name: | **Christy Harris Lemak** |
| Primary UAB Dept.: (Employer if not UAB) | Department of Health Services Administration |
| Degree(s) / Job Title: | Professor and Chair, Department of Health Services Administration. PhD |
| Additional Qualifications pertinent to the study: | Dissertation Chair |

| | |
|---|---|
| Role: | ☐Co- -*OR*- ☒Other |
| Full Name: | **Larry Hearld** |
| Primary UAB Dept.: (Employer if not UAB) | Department of Health Services Administration |
| Degree(s) / Job Title: | Associate Professor, PhD |
| Additional Qualifications pertinent to the study: | Dissertation committee member |

| | |
|---|---|
| Role: | ☐Co- -*OR*- ☒Other |
| Full Name: | **Bishaka (Pia) Sen** |



E15019007

| | |
|---|---|
| Primary UAB Dept.: (Employer if not UAB) | Department of Health Care Organization and Policy |
| Degree(s) / Job Title: | Professor and Chair, PhD |
| Additional Qualifications pertinent to the study: | Dissertation committee member |

| | |
|---|---|
| Role: | ☐Co- -*OR*- ☒Other |
| Full Name: | **Nataliya Ivankova** |
| Primary UAB Dept.: (Employer if not UAB) | Department of Health Care Organization and Policy |
| Degree(s) / Job Title: | Associate Professor, PhD |
| Additional Qualifications pertinent to the study: | Dissertation committee member |

| | |
|---|---|
| Role: | ☐Co- -*OR*- ☒Other |
| Full Name: | **Nir Menachemi** |
| Primary UAB Dept.: (Employer if not UAB) | Indiana University |
| Degree(s) / Job Title: | Professor and department chair, health policy and management, Fairbanks school of public health. PhD |
| Additional Qualifications pertinent to the study: | Dissertation committee member |

| | |
|---|---|
| Role: | ☐Co- -*OR*- ☒Other |
| Full Name: | **Jack Wheeler** |
| Primary UAB Dept.: (Employer if not UAB) | University of Michigan |
| Degree(s) / Job Title: | Professor Emeritus, PhD |
| Additional Qualifications pertinent to the study: | Dissertation committee member |

e. Is this activity funded in any way? ☐Yes ☒No

If yes, attach 1 copy of completed application and complete (i)-(iv):

i. Grant or Contract Title:_____

ii. PI of Grant or Contract:_____

iii. OSP Proposal Number:_____

iv. Funding Source

☐Gov't Agency or Agencies:_____

☐UAB Departmental Funds:_____

☐Other:_____

**2. Mark the category or categories below that describe the proposed research:**

☐1. Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods. The research is not FDA regulated and does not involve prisoners as participants.

☒2. Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) Information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation. Attach questionnaire(s) and/or surveys. If the research involves children as participants, the procedures are limited to educational tests and observation of public behavior where the investigators do not participate in the activities being observed. The research is not FDA regulated and does not involve prisoners as participants.

☐3. Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior that is not exempt under category (2), if: (i) the human subjects are elected or appointed public officials or candidates for public office; or (ii) federal statute(s) require(s) without exception that the confidentiality of the personally identifiable information will be maintained throughout the research and thereafter. Attach to this application a copy of any questionnaire or survey to be used. The research is not FDA regulated and does not involve prisoners as participants.

☒4. Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the Investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects. Attach a specimen release form if applicable. (*Specimens must be preexisting.*) The research is not FDA regulated and does not involve prisoners as participants.

☐5. Research and demonstration projects which are conducted by or subject to the approval of department or agency heads, and which are designed to study, evaluate, or otherwise examine: (i) public benefit or service programs; (ii) procedures for obtaining benefits or services under those programs;(iii) possible changes in or alternatives to those programs or procedures; or (iv) possible changes in methods or levels of payment for benefits or services under those programs. The protocol will be conducted pursuant to specific federal statutory authority; has no statutory requirement for IRB review; does not involve significant physical invasions or intrusions upon the privacy interests of the participant; has authorization or concurrent by the funding agency and does not involve prisoners as participants.

☐6. Taste and food quality evaluation and consumer acceptance studies, (i) if wholesome foods without additives are consumed or (ii) if a food is consumed that contains a food ingredient at or below the level and for a use found to be safe, or agricultural chemical or environmental contaminant at or below the level found to be safe, by the Food and Drug Administration or approved by the Environmental Protection Agency or the Food Safety and Inspection Service of the U.S. Department of Agriculture. The research does not involve prisoners as participants.

3. Briefly describe the proposed research:

**The purpose of this dissertation is to examine the antecedents and outcomes of hospital vertical integration into sub-acute care (SAC). The dissertation consists of three papers that report on the components of an explanatory mixed methods design. Explanatory mixed methods is a type of research design in which quantitative data will be collected first and then these results are explained through qualitative study. The quantitative phase of the study will include Paper 1 and Paper 2. Paper 1 will examine which organizational and market characteristics associated with vertical integration into SAC. Paper 2 will explore the relationship between hospital vertical integration of SAC and financial and quality performance. The qualitative phase will be conducted as a follow up to the quantitative results to help explain the results of the quantitative phase. In the explanatory follow up, Paper 3 will**

**explain the antecedents and outcomes of vertical integration into sub-acute care through the case study of two health care systems.**

**This IRB exemption review requested for the quantitative phase of the study *only*. The unit of analysis is the hospital (an organization). Upon completion of the quantitative analysis an amendment will be submitted to IRB for approval to do the qualitative analysis of the study. Approval for the qualitative phase of the study cannot be requested because selection of the organization, interview questions and analytical plan will be developed based on the results of the quantitative analysis.**

4. Describe how subjects/data/specimens will be selected.
If applicable, include the sex, race, and ethnicity of the subject population:

**This IRB review requests approval for the quantitative phase of the study (paper 1 and 2). My unit of analysis would be hospital and I will be using hospital-level secondary and publicly available data from the sources listed below:**

1. **CMS Medicare Cost Reports Data & CMS Case Mix Index: Data is publicly available for free or charge through CMS's website.**

   **Information about data Medicare Cost Reports: http://www.cms.gov/Research-Statistics-Data-and-Systems/Files-for-Order/CostReports/index.html?redirect=/costreports/**

   **Source of the data Medicare Cost Reports: http://www.cms.gov/Research-Statistics-Data-and-Systems/Files-for-Order/CostReports/Cost-Reports-by-Fiscal-Year.html**

2. **Area Health Resource File: Data is publicly available for free through HRSA website.**

   **Information about Area Health Resource data: http://arf.hrsa.gov/**

   **Source of the Area Health Resource data: http://arf.hrsa.gov/download.htm**

3. **American Hospital Association (AHA) yearly survey data: Available through a certain amount of fee* from the following link. http://www.ahadataviewer.com/book-cd-products/AHA-Survey/**

4. **CMS Hospital Compare Data is publicly available for free or charge through CMS's website.**

   **Information about the Hospital Compare Data: https://www.medicare.gov/hospitalcompare/About/What-Is-HOS.html**

   **Source of the Hospital Compare Data: https://data.medicare.gov/data/hospital-compare**

*** UAB Department of Health Services Administration makes this data available to UAB Faculty and Students (with their advisor's approval) for research.**

5. Does the research involve deception? ☐Yes ☒No

6. Describe why none of the research procedures would cause a subject either physical or psychological discomfort or be perceived as harassment above and beyond what the person would experience in daily life: **The data does not include personally identifiable information. The data is publicly available. The unit of analysis of each data set is the organization. There is no human subject in the data.**

7. Describe the provisions to maintain confidentiality of data: **The data does not have personally identifiable or confidential data. All data is publicly available.**

8. Describe the provisions included in the research to protect the privacy interests of participants (e.g., others will not overhear your conversation with potential participants, individuals will not be publicly identified or embarrassed).: **The data does not have personally identifiable information. The unit of analysis of each data set is the organization. There is no human subject in the data. The analysis will be conducted in a single office setting and never in public settings.**

9. Will the research involve interacting with the subjects? ☐Yes ☒No

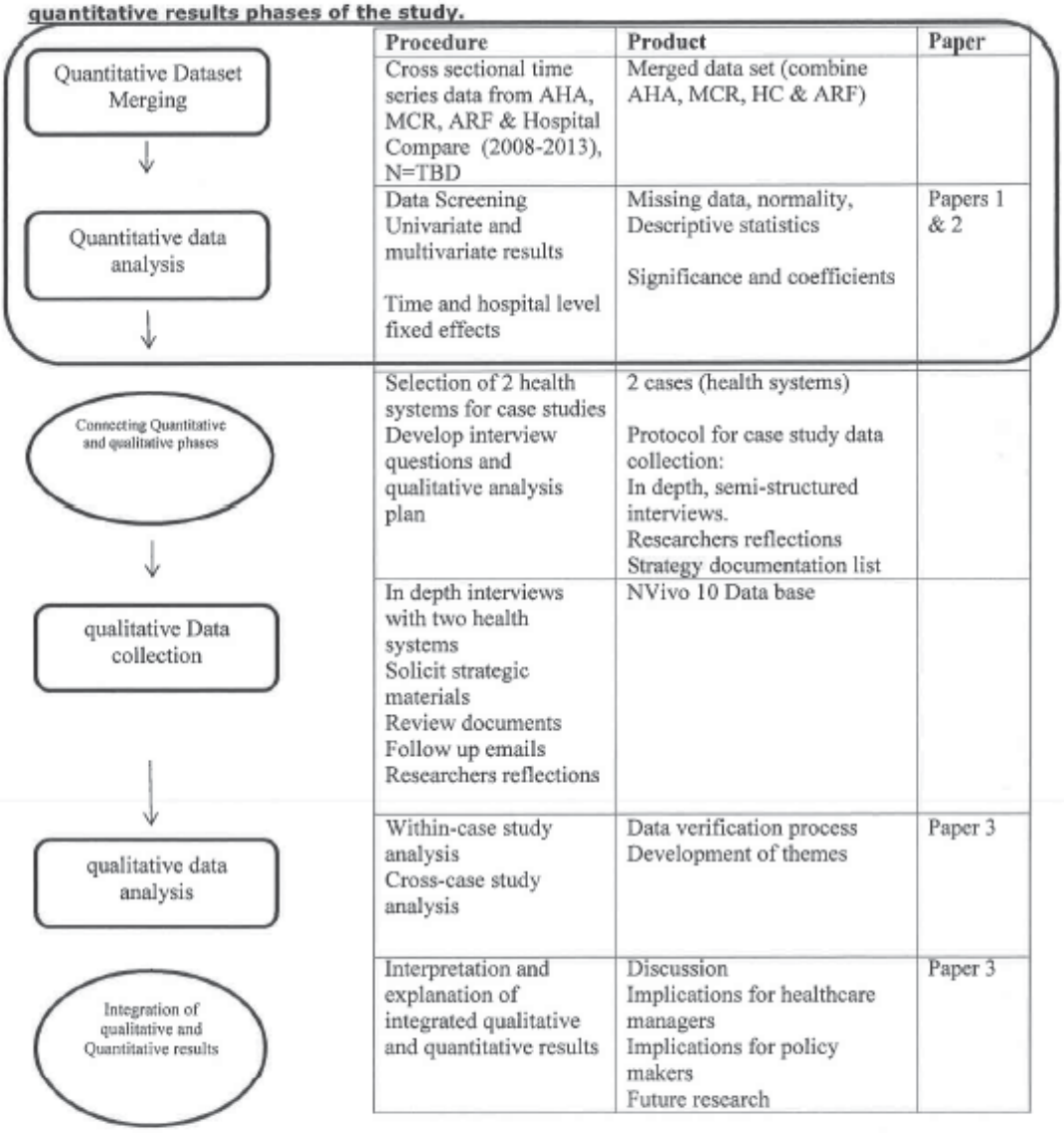
**If yes,** describe the consent process and information to be presented to subjects, including:

- That the activities involve research.
- The procedures to be performed.
- That participation is voluntary.
- Name and contact information for the investigator.

10. Additional Information

In the space below, provide any additional information that you believe may help the IRB review the proposed research, or enter "None."

**Below please find an overview of the entire study. As noted above, this IRB exemption review is being submitted for the quantitative phase of the study (parts in the red box). Upon completion of this phase, an amendment will be submitted to IRB to request approval for the qualitative data collection,qualitative data analysis and integration of qualitative and quantitative results phases of the study.**




| Procedure | Product | Paper |
|---|---|---|
| Cross sectional time series data from AHA, MCR, ARF & Hospital Compare (2008-2013), N=TBD | Merged data set (combine AHA, MCR, HC & ARF) | |
| Data Screening<br>Univariate and multivariate results<br><br>Time and hospital level fixed effects | Missing data, normality, Descriptive statistics<br><br>Significance and coefficients | Papers 1 & 2 |
| Selection of 2 health systems for case studies<br>Develop interview questions and qualitative analysis plan | 2 cases (health systems)<br><br>Protocol for case study data collection:<br>In depth, semi-structured interviews.<br>Researchers reflections<br>Strategy documentation list | |
| In depth interviews with two health systems<br>Solicit strategic materials<br>Review documents<br>Follow up emails<br>Researchers reflections | NVivo 10 Data base | |
| Within-case study analysis<br>Cross-case study analysis | Data verification process<br>Development of themes | Paper 3 |
| Interpretation and explanation of integrated qualitative and quantitative results | Discussion<br>Implications for healthcare managers<br>Implications for policy makers<br>Future research | Paper 3 |

11. Findings? **(applicable for Continuing Review or Final Report only)**

**Not applicable, this is not a continuing review or final report**

State both the positive and negative results received to date:_____

**Since the last IRB review,** have any of the following occurred?

a. Have participants experienced any harms (expected or unexpected)? ☐Yes ☐No
If yes, attach Problem Summary Sheet, and briefly describe here the harms (serious and/or non-serious) experienced by participants:____

b. Have there been any unanticipated problems involving risks to participants or others? ☐Yes ☐No
If yes, attach Problem Report, and briefly describe here the unanticipated problems involving risks to participants or others:____

c. Have you have any problems obtaining informed consent? ☐Yes ☐No ☐N/A
If yes, briefly describe the problems here:____

d. Have any participants or others complained about the research? ☐Yes ☐No
If yes, briefly describe the number and nature of the complaints:____

e. Have any participants withdrawn from the research? ☐Yes ☐No
If yes, indicate the number of withdrawals and include the reason for each:____

f. Have any obvious, study-related benefits occurred for participants? ☐Yes ☐No
If yes, briefly describe the benefits here:____

g. Have the risks or potential benefits of this research changed? ☐Yes ☐No
If yes, briefly describe the changes here:____

h. Has there been any published literature? ☐Yes ☐No
If yes, attach a copy and summarize the published findings here:_____

Principal Investigator's Signature: _____ Date: 10/20/15

THE UNIVERSITY OF ALABAMA AT BIRMINGHAM
School of Health Professions


Institutional Review Board
**Protocol Oversight Review Form**

Date Submitted to IRB: **October 19, 2015**

Title of Project: HOSPITAL VERTICAL INTEGRATION OF SUB ACUTE CARE SERVICES

Name of Principal Investigator: **Carolyn Tory Harper Hogan**

Signature of Principal Investigator: Carolyn Tory Harper Hogan

School: **School of Health Professions**
Department: **Health Services Administration**
Division: _____

Review Process (as determined by Department Chair):
- [x] Departmental Review
- [ ] Divisional Review (Division Director or Designate)
- [ ] Center or Departmental Protocol Review Committee Review
- [ ] Project Review Panel (PRP)—Appointed by the Department Chairman or Division Director (PRP report attached)

I have reviewed the proposed research and concluded that the following apply:
- The research is scientifically valid and is likely to answer the scientific question;
- The researcher and the study team are qualified and/or credentialed to conduct the procedures proposed;
- The researcher has identified sufficient resources in terms of experienced research personnel, facilities, and availability of medical or psychological services that may be necessary as a consequence of participation in the research to protect the research participants.

Name of Official: **Christy Harris Lemak** Title: **Health Services Administration Department Chair, Professor aand Dissertation Committee Chair**
(type or print)

Signature: Christy H Lemak Date: 11-9-15

**Department of Health Services Administration**
553 School of Health Professions Building
1705 University Boulevard
205.934.3113 • Fax 205.934.9112
www.uab.edu/hsa

The University of Alabama at Birmingham
Mailing Address:
SHPB 553
1720 2ND AVE S
BIRMINGHAM AL 35294-3361

# Investigator Training Summary

**Protocol Number E151019007 Hospital Vertical Integration of Sub Acute Care Services**

| Name | Web Date | Course Type | Credits | Course Name |
|---|---|---|---|---|
| ***HARPER, CAROLYN TORY*** | | | | **(Principal Investigator)** |
| | 1/20/2014 | Continuing Education | 1.5 | CITI Social & Behavioral Refresher Course |
| | 8/21/2012 | Continuing Education | 1.5 | Financial Conflict of Interest |
| | 9/1/2011 | Initial Training | 4.0 | CITI Social & Behavioral Basic Course |
| ***HEARLD, LARRY R*** | | | | **(Other Investigator)** |
| | 9/22/2015 | Continuing Education | 1.5 | CITI Social & Behavioral Refresher Course |
| | 7/26/2012 | Continuing Education | 1.5 | Financial Conflict of Interest |
| | 3/1/2010 | Initial Training | 4 | IRB Investigator 101 Initial Training |
| ***IVANKOVA, NATALIYA V*** | | | | **(Other Investigator)** |
| | 11/27/2012 | Continuing Education | 1.5 | Financial Conflict of Interest |
| | 9/9/2004 | Initial Training | 4 | Collaborative IRB Training Initiative (CITI) Basic Course |
| ***MENACHEMI, NIR*** | | | | **(Other Investigator)** |
| | 8/14/2012 | Continuing Education | 1.5 | Financial Conflict of Interest |
| | 8/28/2001 | Initial Training | 4 | Original Program: UAB Human Subjects Protection Training |
| ***SEN, BISAKHA*** | | | | **(Other Investigator)** |
| | 7/26/2012 | Continuing Education | 1.5 | Financial Conflict of Interest |
| | 1/8/2003 | Initial Training | 4 | Collaborative IRB Training Initiative (CITI) Basic Course |
| ***LEMAK, CHRISTY*** | | | | **(Faculty Advisor)** |
| | 8/29/2014 | Continuing Education | 1.5 | Financial Conflict of Interest |

# Project Revision/Amendment Form

Rec'd 5/2/16

irb

Form version: June 26, 2012

*In MS Word, click in the white boxes and type your text; double-click checkboxes to check/uncheck.*

- Federal regulations require IRB approval before implementing proposed changes. See Section 14 of the IRB Guidebook for investigators for additional information.
- Change means any change, in content or form, to the protocol, consent form, or any supportive materials (such as the Investigator's Brochure, questionnaires, surveys, advertisements, etc.). See Item 4 for more examples.

| 1. Today's Date | April 28, 2016 | 23060 |
|---|---|---|

## 2. Principal Investigator (PI)

| | | | |
|---|---|---|---|
| **Name (with degree)** | Carolyn Tory Harper, BA | **Blazer ID** | toryh |
| **Department** | Health Services Administration | **Division (if applicable)** | |
| **Office Address** | 1720 2nd Avenue South<br>School of Health Professions Building 553<br>Birmingham, AL 35294-3361 | **Office Phone** | 860-933-6251 |
| **E-mail** | Toryh@uab.edu | **Fax Number** | 205-975-6608 |

**Contact person who should receive copies of IRB correspondence (Optional)**

| | | | |
|---|---|---|---|
| **Name** | | **E-Mail** | |
| **Phone** | | **Fax Number** | |
| **Office Address (if different from PI)** | | | |

## 3. UAB IRB Protocol Identification

| | |
|---|---|
| **3.a. Protocol Number** | E151019007 |
| **3.b. Protocol Title** | Hospital Vertical Integration into Sub Acute Care Services |

**3.c. Current Status of Protocol—Check ONE box at left; provide numbers and dates where applicable**

- ☒ **Study has not yet begun** — **No participants, data, or specimens have been entered.**
- ☐ **In progress, open to accrual** — **Number of participants, data, or specimens entered:**
- ☐ **Enrollment temporarily suspended by sponsor**
- ☐ **Closed to accrual, but procedures continue as defined in the protocol (therapy, intervention, follow-up visits, etc.)**
  - **Date closed:**
  - **Number of participants receiving interventions:**
  - **Number of participants in long-term follow-up only:**
- ☐ **Closed to accrual, and only data analysis continues**
  - **Date closed:**
  - **Total number of participants entered:**

## 4. Types of Change

**Check all types of change that apply, and describe the changes in Item 5.c. or 5.d. as applicable. To help avoid delay in IRB review, please ensure that you provide the required materials and/or information for each type of change checked.**

- ☐ **Protocol revision (change in the IRB-approved protocol)**
  In Item 5.c., if applicable, provide sponsor's protocol version number, amendment number, update number, etc.
- ☐ **Protocol amendment (addition to the IRB-approved protocol)**
  In Item 5.c., if applicable, provide funding application document from sponsor, as well as sponsor's protocol version number, amendment number, update number, etc.
- ☐ **Add or remove personnel**
  In Item 5.c., include name, title/degree, department/division, institutional affiliation, and role(s) in research, and address whether new personnel have any conflict of interest. See "Change in Principal Investigator" in the IRB Guidebook if the principal investigator is being changed.
  - ☐ **Add graduate student(s) or postdoctoral fellow(s) working toward thesis, dissertation, or publication**
    In Item 5.c., (a) identify these individuals by name; (b) provide the working title of the thesis, dissertation, or publication; and (c) indicate whether or not the student's analysis differs in any way from the purpose of the research described in the IRB-approved HSP (e.g., a secondary analysis of data obtained under this HSP).
- ☐ **Change in source of funding; change or add funding**
  In Item 5.c., describe the change or addition in detail, include the applicable OSP proposal number(s), and provide a copy of the application as funded (or as submitted to the sponsor if pending). Note that some changes in funding may require a new IRB application.

☐ **Add or remove performance sites**
In Item 5.c., identify the site and location, and describe the research-related procedures performed there. If adding site(s), attach notification of permission or IRB approval to perform research there. Also include copy of subcontract, if applicable. If this protocol includes acting as the Coordinating Center for a study, attach IRB approval from any non-UAB site added.

☐ **Add or change a genetic component or storage of samples and/or data component—this could include data submissions for Genome-Wide Association Studies (GWAS)**
To assist you in revising or preparing your submission, please see the IRB Guidebook for Investigators or call the IRB office at 934-3789.

☐ **Suspend, re-open, or permanently close protocol to accrual of individuals, data, or samples (IRB approval to remain active)**
In Item 5.c., indicate the action, provide applicable dates and reasons for action; attach supporting documentation.

☐ **Report being forwarded to IRB (e.g., DSMB, sponsor or other monitor)**
In Item 5.c., include date and source of report, summarize findings, and indicate any recommendations.

☐ **Revise or amend consent, assent form(s)**
Complete Item 5.d.

☐ **Addendum (new) consent form**
Complete Item 5.d.

☐ **Add or revise recruitment materials**
Complete Item 5.d.

☒ **Other (e.g., investigator brochure)**
Indicate the type of change in the space below, and provide details in Item 5.c. or 5.d. as applicable.
Include a copy of all affected documents, with revisions highlighted as applicable.

▶ In the

## 5. Description and Rationale

**In Item 5.a. and 5.b, check** Yes **or** No **and see instructions for** Yes **responses.**
**In Item 5.c. and 5.d, describe—and explain the reason for—the change(s) noted in Item 4.**

☐Yes ☒No **5.a. Are any of the participants enrolled as normal, healthy controls?**
If yes, describe in detail in Item 5.c. how this change will affect those participants.

☐Yes ☒No **5.b. Does the change affect subject participation, such as procedures, risks, costs, location of services, etc.?**
If yes, FAP-designated units complete a FAP submission and send to fap@uab.edu. Identify the FAP-designated unit in Item 5.c.
For more details on the UAB FAP, see www.uab.edu/cto.

**5.c. Protocol Changes: In the space below, briefly describe—and explain the reason for—all change(s) to the protocol.**

▶ Protocol has not changed, instead the project is adding interviews healthcare executives of health systems. The original protocol only included analysis of publicly accessible data sets. This amendment is requesting approval to add interviews with healthcare system executives. I am making this change because the publicly available data did not provide full answers to the research questions. Through the addition of the interviews (being requested in this amendment), we will be able to gain more clarification about healthcare organizational strategies toward sub-acute care and skilled nursing facility integration and provide full answers to the research questions

**(a) describe all changes to IRB-approved forms or recruitment materials and the reasons for them;**

I am not changing forms or recruitment materials. I am adding interviews with healthcare executives regarding the postacute care strategy of their health care organization. I am providing a copy of the interview questions and also the recruitment letter and requesting approval of the new items.

**(b) describe the reasons for the addition of any materials (e.g., addendum consent, recruitment); and**

I am requesting IRB approval of two additional items that were not included in my initial IRB protocol (UAB OHRP IRB Protocol Number): E151019007; Assurance Number FWA00005960). The original protocol only included analysis of publicly available data sets. I am requesting to add interviews In addition to the original approved IRB protocol, the study will now add interviewing healthcare organizations regarding their strategy toward sub-acute care and skilled nursing facility integration. The interviews will take place with at least two members of the healthcare executive team. The interviews will take place at the health care system offices and on the phone. Our study will include the recruitment of health care organizations throughout the United States to understand hospital integration into skilled nursing facilities. We are especially interested in why organizations adopt a strategy and whether or not integrated skilled nursing facilities are associated with improved financial performance and quality outcomes. The information provided may be beneficial in helping understand what hospital sub-acute care strategies can be effective.

Participating in this study involves a minimal amount of time and effort and is completely voluntary. We want to learn about how healthcare systems adopt strategies to manage patients as they move from acute care facilities to skilled nursing facilities by asking a series of interview questions to executives on the leadership team. These interviews will last approximately 30-60 minutes in length.

We plan to synthesize our findings across the healthcare systems and produce a paper for publication in a peer-reviewed journal that will help other healthcare systems as well as policymakers improve their strategy toward skilled nursing facilities. All information obtained during the interview will be considered confidential and will only be used to identify broader themes across our discussions. Individual and healthcare system names will not be included in the paper.

Attached to this application are two documents that are being submitted for approval through this amendment. The first document is a recruitment letter that will be sent to all potential organizations we would like to interview as a part of the study. The second document is a copy of the interview questions that will be asked to all participants in the study.

**(c) indicate either how and when you will reconsent enrolled participants or why reconsenting is not necessary (not applicable for recruitment materials).**

Previously my protocol was just examining publicly accessible data sets and did not include any interviews with healthcare organizations. I am making this change because the publicly available data did not provide full answers to the research questions. Through the addition of the interviews (being requested in this amendment), we will be able to gain more clarification about healthcare organizational strategies toward sub-acute care and skilled nursing facility integration and provide full answers to the research questions. Attached to this document is a copy of the recruitment letter which will act as the consent form.

Reconsent is not necessary because the original IRB approval did not include interviewing healthcare organizations and therefore we have not received consent to date for this part of the study.

**Also, indicate the number of forms changed or added. For new forms, provide 1 copy. For revised documents, provide 3 copies:**

I am not changing any current forms. I am adding my recruitment letter as my consent. I am also adding the interview questions that I plan to ask during the interviews.

Signature of Principal Investigator [signature] Date 5/3/16

**FOR IRB USE ONLY**

☐ Received & Noted ☐ Approved Expedited* Exempt ☐ To Convened IRB

Signature (Chair, Vice-Chair, Designee) Date 5/12/16

DOLA NA

Change to Expedited Category Y / N / NA

*No change to IRB's previous determination of approval criteria at 45 CFR 46.111 or 21 CFR 56.111