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UNIVERSITY OF CALIFORNIA

Los Angeles

VHA Facility Integration: Changes in Operational Effectiveness and Perceived Quality, 1993-1997

A dissertation submitted in partial satisfaction of the requirements for the degree of Doctor of Philosophy in Health Services

by

Leah Jeanne Vriesman

2001

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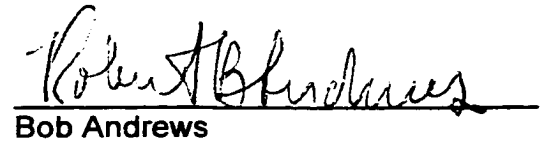

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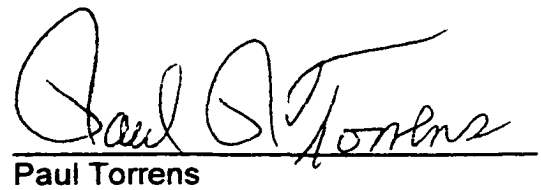

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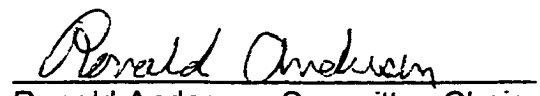

Ronald Andersen, Committee Chair

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List of Exhibits and Tables

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PUBLICATIONS AND PRESENTATIONS

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Zach, AP et al. (1997) Report on Heart Attack 1991-1993, Volume 1: User's Guide. Sacramento, CA: California Office of Statewide Health Planning and Development (OSHPD).

VanDeusen Lukas C., Mittman B., Vriesman L., et al. (February, 1998) "Characteristics and Structures of VHA Integrated Facilities." Abstract presented to the Department of Veterans Affairs' Sixteenth Annual HSR&D Service Meeting, Washington, D.C.

Yano E., Mittman B., Vriesman L., et al. (February, 1998) "Effects of VHA Facility Integrations: Preliminary Results." Abstract presented to the Department of Veterans Affairs' Sixteenth Annual HSR&D Service Meeting, Washington, D.C.

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Vriesman, L. and Mazonson, P. (1998) Improving Pharmaceutical Utilization for Medicare Enrollees Proves Difficult. TIPS on Managed Care, 3(4): pp. 15-20.

Vriesman L., Yano E., and Andersen R. (February, 2001) "VHA Facility Integration: Changes in Operational Effectiveness and Perceived Quality, 1993-1997." Poster presented at the Department of Veterans Affairs' Nineteenth Annual Health Services Research and Development (HSR&D) Service Meeting, Washington, D.C.

ABSTRACT OF THE DISSERTATION

VHA Facility Integration: Changes in Operational Effectiveness and Perceived Quality, 1993-1997

By

Leah Jeanne Vriesman

Doctor of Philosophy in Health Services

University of California, Los Angeles, 2001

Professor Ronald Andersen, Chair

In 1995, the Veterans Health Administration initiated medical center integrations as the way to reduce service and staffing duplication, integrate clinical programs, achieve economies of scale and increase resources to invest in new services. By FY1999, 48 VA medical centers had been approved for integration into 23 healthcare systems. This study's purpose is to assess the financial and staffing impact of the 14 early facility integrations (FY95-96), controlling for possible systematic market shifts and structural characteristics. There is little empirical evidence in both the business and healthcare literature to support integration as an operational improvement strategy.

A pretest/posttest nonequivalent control group time-series design was used for selected analyses between integrated (n=14 systems, 30 facilities) and nonintegrated facilities (n=127 facilities). Operational effectiveness was assessed as a function of direct and indirect costs per bed day of care, clinical to administrative staffing ratios,

and direct staff turnover rate. Perceived quality was measured as the proportion of patients rating fewer problems with access to and coordination of care. Univariate and multivariate analyses were performed to assess the early impact of facility integration.

VHA facility integration was not found to be a significant predictor of improvement in operational effectiveness or perceived quality as compared to nonintegrated facilities. Weak support was found for integration affecting direct staff turnover, but this relationship was diminished when changes in baseline differences were controlled. Some significant operational differences were detected between the two groups that provide interesting comparisons of facilities, but comprehensive conclusions remain elusive. Consistent with the literature, facility integration as a VHA solution for streamlining operations and improving quality cannot be supported. Limitations on this study include the small number of observations, the use of the organization as the unit of analysis which decreases the ability to control for heterogeneity, and the short study period which may not have allowed sufficient time for facility integrations to mature. VHA planners and policymakers should continue using strong fiscal discipline and proven staffing programs for operational improvement in all facilities, while continuing to study the short and long term effects of integration on capacity and outcomes.

Chapter 1: Introduction

Since the mid-1980s, hospitals have been increasingly pressured to treat patients using advancing health care technologies while in a restrictive managerial environment of cost-containment and downsizing. The concept of improving efficiency while reducing the cost of health care is a particularly complex task. Rising costs and the inadequate techniques of standardizing medical quality and measuring patient satisfaction have increased the need for health facilities to find solutions for providing more cost-efficient and cost-effective care. Once considered a revenue generator, hospitals are now considered to be "cost centers", often labeled as a pricey burden to the local health plan, state, and/or federal governments.

Recent strategies to tackle these challenges have surfaced in a wave of organizational restructuring, originally witnessed most prominently in manufacturing industries, but now also being experienced in health care. The pace of mergers, acquisitions, and corporate consolidation in all industries continues at an increasing rate. In 1998, there were mergers worth $2.4 trillion worldwide, a 50% increase over 1997, itself a record year (Economist, 1999b). The continuing popularity of mergers and acquisitions is probably a reflection of the widespread belief among managers that acquisitions provide a quicker and seemingly easier route to achieving growth and/or diversification objectives. Mergers, consolidations, and other integrative collaborations for providing health services are being conducted in both the private and public sectors in an effort to solve the current problems of rising costs and the mis-coordination of delivering clinical medicine in a piecemeal fashion rather than as a continuum of care.

In health care, it is assumed that consolidations help fill out the continuum of care and create "one-stop-shopping" so that fewer inpatient dollars can be stretched due to fixed payments. Cost containment is easier when excess capacity is eliminated, with the intent of creating greater structural and operational unity. For these reasons, hospital consolidations are at record-setting levels – but evolution toward integration is more complex than some thought. As a consequence, consolidation has not produced the anticipated membership savings or economic leverage (Brennan et al, 1998).

Our nation's experience with integration in all markets is relatively short. The dilemma, however, is that the number of studies and published literature about these structural initiatives are insufficient to draw any definitive conclusions regarding the effects or outcomes of re-structuring the health care industry. While acquisitive growth has been a commonly employed strategy, many acquisitions have not been successful. This suggests that there is an inadequate theoretical and practical understanding of this complex phenomenon.

The Veterans Affairs health care delivery system is at a crossroads in the evolution of its inpatient-based health care system. It lags behind the private sector in improving the efficiency of its hospitals. At the same time, the recognized demands for outpatient care, nursing home care, and some specialized services is taxing its ability to meet veterans' needs because it remains primarily hospital-centered. In 1995, the VA Under-Secretary of Health (Kenneth Kizer, M.D.) in the Department of Veterans Affairs advocated facility integration as a way for regional VHA medical centers to achieve a reduction in expenses and to increase quality and access for the nations' veterans.

To mirror current private market efforts at efficiency and streamlined operations, the VA has initiated the "restructuring of the institutions, management, or grouping of facilities to reduce administrative costs and increase the proportion of resources devoted to direct patient care" (Kizer, 1996). Because this is an unprecedented operational and structural strategy for the VHA, many medical centers have chosen to respond with the hopes of coordinating regional operations, reducing overall budget growth, and redirecting resources away from administration to patient care activities. But there was little evidence presented prior to undertaking this initiative that applying market-based techniques will necessarily have the same effect on the public sector. This study is an evaluation of the Veterans Affairs' policy statement that "facility integrations can allow the VHA healthcare system to provide the same or higher quality services at a significantly reduced cost" (Kizer, 1997). It offers an opportunity to specify and clarify the definitions of the management and market theories of mergers and integration as applied to the national VHA health care system. Even if the merger/consolidation theories are applicable to this recent initiative, the study may find that the unique circumstances of a public, nationalized program such as VHA health care delivery is an exception to the theoretical market logic and hypothesized outcomes.

Initial Project

To facilitate the integration process and improve future integration efforts, the Under Secretary for Health asked that a systematic assessment and evaluation of facility integrations be conducted, with a specific focus on management lessons that can be learned and applied to future integrations. Considerable effort to monitor and

evaluate ongoing facility integrations and to communicate lessons learned is being invested already by the Department of Veterans Affairs' Chief Network Office and the Office of Employee Education (OEE). The Management Decision and Research Center (MDRC) in Boston and the Sepulveda (CA) Center for Healthcare Provider Behavior conducted a study that built upon and complemented the previous efforts by analyzing the integrations using a framework comprising the structure, process, and outcomes of integration and characteristics of integrating facilities.

The first phase of the MDRC/Sepulveda project was based on a comparative approach that involved four sets of analysis. The first was an abbreviated literature review and development of an applicable conceptual model to better analyze and explain the process of health care integration by building upon the existing body of knowledge. The second analysis, document coding, was performed on the collected integration documents and reports from 14 of the VHA mergers that had already occurred. The third step was to analyze new information from interviews, documents, and data obtained during brief (2 day) site visits to integrating facilities and from telephone interviews. The first summary report was published July 1998.

In approximately year three (1999) of the study, an analysis of administrative data, such as survey data and fiscal and clinical care data maintained by VHA central data processing facilities, was performed to assess the quality, access and financial outcomes of facility integration. The second report, published in December 1999, focused on describing the organizational and operational structure of the integrating systems and the effects of integration on system performance. The analyses were based on data from three sources: a survey of integrated system directors; a survey of

managers in 19 integrated systems; and administrative data for the integrated facilities and selected comparison facilities.

The study concluded that most VA integrated systems follow a "rough order", or developmental progression, in bringing facilities together. Most integrated systems have made substantial progress toward structural integration, with the integration of clinical services progressing at the same rate as administrative services. Dominant-partner systems show greater, or at least faster, progress toward structural integration than equal-partner systems. The progressing age of the integrating system was an important determinant of evolution toward administrative and structural integration, and management's perceived impact of integration (VanDeusan Lukas et al, 1998).

Dissertation Research Objectives

The main objective of this impact assessment is to examine the early effects (12-18 months) that facility integration has had on the operational efficiency and perceived customer quality of inpatient hospital care being provided within the national VHA system. As the logic of merger implies, the most substantial changes in facility efficiency should occur due to immediate reductions in administrative personnel and positions from major service consolidations during the initial stages of integration. It may take a longer period of time to witness any changes that might occur in the full integration or collaboration of clinical services. This study assesses the 12-18 month financial and staffing impact of the 14 early VAMC facility integrations (FY95-96) and will draw as specific conclusions as possible as to whether any of the promised gains were realized. The study also will gauge the extent to which facility integration is

associated with a change in the quality of care delivered as perceived by the VHA customers, the veterans.

Consistently having the role of research assistant while periodically undertaking project management responsibilities, it was my direct experience on this project since its inception and into its second year that provided me with access to the topic, leadership, and data for my dissertation. By participating in the development of the model and collection of data, I had similar interests in learning about integration's effect on organizational structures in the VHA. However, I wanted to create hypotheses that specifically targeted the perception that what must be good for the private sector is appropriate for the public sector. This was a notion that did not seem to be true, necessarily, as the mission of a public sector organization is, by definition, to be a more accessible and sometimes more broadly scoped institution than the private sector. My dissertation considers whether facility integration is the right organizational strategy for greatly improving efficiency and quality in the public sector.

It is my intention to use a combination of theories and findings, as well as direct project experience and case studies, to create and tailor an appropriate explanatory model for the VHA's using facility integration as a means to greater operational effectiveness and improving veterans' perceived quality of care. It is important to measure organizational performance to identify the antecedents of effectiveness, based on the characteristics of the public sector institutions under study – the inpatient medical centers in the Veterans Health Administration. This is the typical reason that theoretical researchers want performance data; they wish to determine what factors predict effectiveness (Rundall, 1998). The expected contribution of this study is to add to the theoretical, as well as the practical, understanding of facility integration. It will

clarify, test, and discover the early effects that mergers and facility integration had on the veterans' healthcare delivery system.

Brief Framework

This dissertation starts with an introduction of the project, the questions that the work is setting out to answer and the hypotheses guiding my quantitative and qualitative exploration. Chapter 2 describes the relevant general business and the health care literature to define integration and discuss findings regarding its impact in different industries. Chapter 3 examines recent VA history, the changing environment, and current motives to redesign the system to make a better healthcare delivery system for our nation's veterans.

Chapter 4 addresses the unique challenges in research design and methodology for organizational analyses. Data analysis techniques, variable specification and data sources are discussed. The results of the statistical work are displayed and discussed in Chapter 5.

To more fully address the recent facility integration activity, and to take into account the unique nature of organizational-level analysis, Chapter 6 summarizes the work of the original MDRC/Sepulveda project relative to hypotheses in this study and highlights the idiosyncratic differences of the 14 integrations. Chapter 6 also highlights the MDRC findings of integration timing and cultural similarities. This is important as it provides insights about the decisions leading up to integration that my effectiveness study does not provide, and therefore makes for a richer interpretation of findings.

Chapter 7 discusses the findings from previous sections and draws conclusions for this study. Chapter 8 notes limitations of this study and the problems researchers

encounter with organizational analyses in general, considering possibilities for future research.

Research Hypotheses and Questions

A major premise for this study is that hospitals intentionally engage in merger to benefit from efficiencies and to consolidate their operations in order to remain viable. The popularity of mergers and takeovers in the private sector since the 1980s has prompted the government to adopt them enthusiastically in its drive to rationalize services. This application of private market efficiency rhetoric to the public sector can be seen as the VA mimics attempts at efficiency reforms.

In the private market, mergers may occur in order to attain the requisite investment and management base (critical mass) necessary to acquire costly health technology, increase market share, support desired clinical services, or attract increasingly specialized technical staff (Alexander et al, 1996). However, as the VA operates in the public sector, it does not require increased scope and size for access to capital and to attract resources. Rather, it has consolidated services to achieve efficiency and to reduce over-bedding and staffing. Specifically, we would anticipate a greater reduction in the overall scale of operation, improved operating efficiency, and reduced duplication of staffing compared to nonintegrated VA medical facilities. One would expect some of the benefits that result from merger to be greatest in the short run as improvements in operating efficiency will come primarily from reduction of functional and administrative duplication as well as redundant clinical services.

Measures of "Operational Effectiveness":

Q1: Does facility integration reduce expenses per bed day of inpatient care more in

integrated than nonintegrated medical centers?

Hypothesis 1: Integrated facilities should experience slower growth in costs per bed day of care than nonintegrated facilities.

Rationale A: The numerator of this ratio, total expenses (administrative, clinical and support), should increase at a lower rate in integrated VAMCs. This is because administrative and support costs will be reduced by the elimination of duplicative staff and programs.

Rationale B: The denominator, bed days of care, should not be significantly different between integrated and nonintegrated facilities. All facilities strive to reduce unnecessary hospitalization and move care to an outpatient setting. Actual numbers of beds may be reduced more at integrated facilities, but bed days of care should not be less than if they had stayed independent and were managing their inpatient vs. outpatient delivery of services.

Q2: Does facility integration lead to the redirection of resources from administrative budgets to direct patient care?

Hypothesis 2: Integrated facilities should focus a relatively greater proportion of resources on direct patient care compared to nonintegrated facilities and should increase this proportion over time due to administrative reductions.

Rationale: All VA facilities, as a mandate from national and regional headquarters, are working to reduce expenses at inpatient facilities. These efforts may result in a slight increase in clinical resources proportionately to administrative resources for all VAMCs. However, as VA regional management allows individual facilities to route resource "savings" back into local programs and services, the increase should be greater for integrated facilities. This is expected due to the promise of

administrative expense reductions in integrated facilities, creating both a greater proportion of direct patient staff and an increase in the ratio of clinical staff to administrative staff as well.

Q3: Does facility integration create a greater level of direct care staff turnover?

Hypothesis 3: Integrated facilities will experience greater direct staff turnover than nonintegrated facilities.

Rationale: Extensive organizational change such as facility integration may cause staff discontent, leading to a greater increase in employee separations than normally occurs.

Measures of "Perceived Quality":

Q4: Do facility integrations improve the veterans' perception of access to care and coordination of services?

Hypothesis 4: Integrated facilities will experience some improvement in patients' perceived quality regarding access to care, but less than nonintegrated facilities.

Rationale: Veterans' access to care may be compromised when facilities merge or consolidate services between multiple facilities. The possible reduction of services due to consolidation may cause an increase in problems accessing care due to additional driving times, and unfamiliarity with new locations for services, and "brand" loyalty of existing care patterns at certain institutions. This will most likely be offset by integrating VAMCs sensitivity to consolidation, and the substantial effort by all facilities to continually open more access points, unrelated to inpatient facility integration. Most VAMCs, whether integrated or not, should improve overall, however, from quality programs and service improvements already in place.

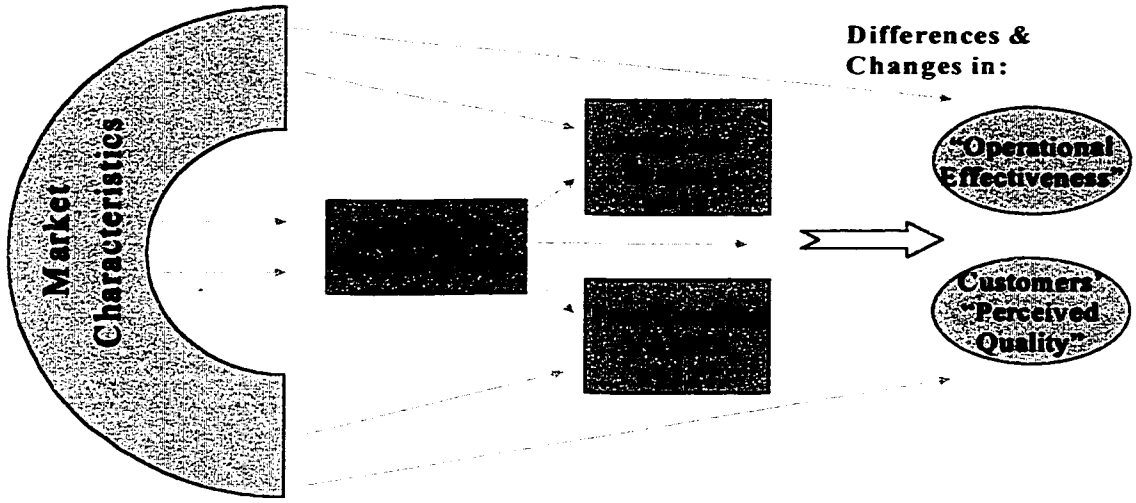
Hypothesis 5: Integrated facilities will experience more patient reported problems with coordination of care than nonintegrated facilities.

Rationale: The defining objective of an integrated facility would be the seamless operation of multiple services at multiple facilities, as the movement of patient among services would, theoretically, be managed under a single umbrella of personnel. In the short run, however, this effect may not be noticeable due to the upset of consolidating services or programs to one facility and the confusion therein. Most VAMCs, whether integrated or not, should improve overall, however, from quality programs and service improvements already in place.

Conceptual Model

The following model introduces the relationship between selected market and structural characteristics expected with facility integration. Because the environment may both influence the way facilities are structured as well as have a direct effect on operational effectiveness and quality integration, associations and relationships will be tested between the market variables and structure as well as directly with the five dependent variables. Pre-existing structural characteristics might also encourage integration as well as short-term outcome effects. The model highlights these relationships, and the specific variables will be discussed further in Chapter 4: Research Design and Methods.

Exhibit 1: Model for VA Integration Study



Chapter 2: Literature Review

Business and Economic Literature Review

Definition of Merger and Acquisition

The general management literature defines merger most often as the process of combining two or more facilities and their assets to form a new integrated entity, and is a strategy being applied rapidly throughout all industries (Peterson & Fisher, 1991; Gillies et al, 1992). Strategic management literature interchangeably uses mergers or acquisitions to mean any transaction that forms one economic unit from two or more previous ones (Lubatkin & Shrieves, 1986).

Specifically, hospital mergers have been defined by the American Hospital Association (1992) as: "combinations of previously independent hospitals formed by either the dissolution of one hospital and its absorption by another, or the creation of a new hospital from the dissolution of all participating hospitals (AHA, 1992). An even more precise definition, follows:

> A **merger** is a type of combination where organization "A" absorbs organization "B" and the resulting combined entity is organization "A". No new accounting entity is created. A **consolidation** is a combination where organization "A" and "B" combine and the combined entity is organization "C". Thus, a new entity is created. (Finkler & Horowitz,1985; Bogue et al, 1995)

It seems that the activities underway within the VHA fit both definitions of merger and consolidation. It would be accurate to call some of the VHA integration initiatives "consolidations" since they have created a new identity and new accounting system (i.e., the Temple, Waco, and Marlin VA Medical Centers came together to aggregate services and form the Central Texas Healthcare System with a single

information system). Yet there are clearly "mergers" that have taken place as the smaller facilities lose their identity to the larger (i.e., the Livermore Medical Center was subsumed into the Palo Alto facility to form the Palo Alto Healthcare System).

Studies of past merger trends have shown that buyers usually justify deals by citing questionable synergies (Economist, 1999). The buyers most often state that mergers take place in order to improve economic performance. The economics of the emerging systems, however, do not seem to be noticeably superior to that of single hospitals. Overall, except for a substantial literature describing merger processes, relatively little empirical research has been conducted on the outcomes of mergers and consolidations. Because hospital consolidations are often based on *a priori* expectations, it's very difficult to measure the underlying causes of mergers and their results. Possibly, this is due to the lack of a database for such research. Most hospitals that merge no longer report at the facility level.

Because of the limited study in the health care field on mergers and integrations, it is appropriate and imperative to turn to the general management and industry literature to discover additional findings. Merger theories and their application need to be explored and applied to this study in full detail for the discovery of similarities or inconsistencies between healthcare's public and private sectors.

Common Merger Motive Theories

The American economy has experienced a wave of business mergers, rivaling previous periods of intense merger activity. The major private market premise for instigating a merger, acquisition or consolidation is that various financial and operating efficiencies will be gained due to the increased control of once fragmented services

and production under a single coordinating body. Rapid changes in technology have been widely perceived as necessitating mergers in order to realize cost savings. However, in most industries, the economic motives for mergers fall into three categories: (1) efficiency enhancement through economies of scale or scope, (2) attempts to gain market power, and (3) tax advantages (Danzon, 1994; Alexander & Morrissey, 1998). DiMaggio and Powell (1983) imply that various institutional pressures to change organizational structure may also stem from legal requirements, the threat of uncertainty that leads to imitation of competitive or similar facilities, or the force of the industry's professional opinion. The expected theoretical benefits from a general facility merger are (Cave, 1994; D'Aveni & Ravenscraft, 1994; Hitt et al, 1998; Parker & Hartley, 1991; Treat, 1976; Trautwein, 1990; Whittaker, 1981):

- economies of scale in operations;
- an improvement in the quality of services offered;
- the obtaining of capital more readily;
- the position of monopolistic market power; and
- the seeking of complements or substitutes for the resources of the facility.

Theoretical merger motives, such as economies of scale and decreased transaction costs between different stages of production, have triggered fewer actual efforts toward merger than have competitive, defensive reactions (Porter, 1987; Trautwein, 1990). However, it is exactly the consequences or idealized benefits of merger that is often the rhetoric or "marketing" behind such activity. Of the eight predominant merger motive theories aggregated from the management literature, four are based on either the transfer of wealth to/from shareholders or state that mergers are undertaken purely for the financial benefit of management. These are considered not applicable to this study due to the nature of the VHA. The other four motives, net

gains through synergies, merger as process outcome, or merger as macro-economic phenomenon (2 theories) are, in parts, applicable and will be discussed briefly below and applied throughout the paper.

Efficiency Theory

The efficiency theory views merger as being planned and executed to achieve synergies and is most often quoted as the primary reason behind merger. Financial synergies (most appropriately measured by return on investment, cash flow, and access to capital) have received theoretical criticism despite being the easiest to test empirically. The main argument is that financial synergies of any kind cannot be achieved in an already efficient capital market, although size advantages do seem to exist (Trautwein, 1990).

A second component, operational synergies, can stem from either combining operations of previously separate units or from knowledge transfers (Trautwein, 1990). Both techniques may lower the cost of the involved business units or may enable the company to offer unique products or services. But these potential advantages have to be weighed against the cost of combining or transferring assets (Porter, 1985).

And last, managerial synergies are realized when the dominant firm's managers possess superior abilities that benefit the other organization's performance. Both managerial and operational synergies have been criticized, for being evasive concepts that are often claimed for merger but seldom measured, tested, and proven (Porter, 1987;Trautwein, 1990).

Methodological problems in terms of the absence of standards for health care services, definitional problems of efficiency in the health care sector, and

methodological weaknesses of previous techniques have plagued researchers seeking definitive answers as to what exactly constitutes health care delivery efficiency. Even if we can recognize an efficient health care activity, what aspects could be replicated by others to diffuse that capability? The differing perception of close observers is the best indicator that direct evidence can produce unreliable results, thereby causing the efficiency theory's record to be somewhat unfavorable (Trautwein, 1990).

Process Theory

The second attempt at categorizing the motives for merger is the process theory. Although the acquisition process has not been recognized previously as a key determinant of outcomes, previous literature has dealt with a range of acquisition-related matters. Research concerning "strategic fit" has emphasized strategic and financial analysis during the pre-acquisition period, and issues of "organizational fit" and postmerger integration have received considerably less attention (Jemison & Sitkin, 1986). Focusing on "strategic fit" and "organizational fit" are imperative as a prescriptive approach, but the actual "process perspective" emphasizes that the process of acquisition is a separate factor that affects outcomes (Jemison and Sitkin, 1986).

There is mounting evidence that acquisitions do not reliably yield the desired financial returns. This suggests that only using the efficiency perspective of mergers may provide an incomplete view of acquisition processes and outcomes. It should be supplemented with a process perspective, which recognizes that the acquisition process itself is a potentially important determinant of acquisition activities and outcomes. In addition, because so many different stakeholders are involved in an acquisition, many will be concerned with their own particular interests versus the

ultimate success of the integration activities. Jemison and Sitkin (1986) strongly encourage managers and researchers to direct their attention to the process itself and the impediments that may fundamentally affect their ability to understand how to achieve desired benefits from their acquisition strategies.

Jemison and Sitkin (1986) contend that understanding acquisition outcomes may be accomplished more thoroughly in a variety of psychological and organizational behavior theories that direct attention to the underlying process-driven impediments to effective mergers or acquisitions. The authors state that process modeling, in brief, sees acquisition as a process with distinctive characteristics that may affect important organizational activities and outcomes. Because few of the firms involved in mergers and integration make these types of structural decisions on a routine basis, most managers are unsuspecting of the events that will occur. A process model reveals the importance of different decisions at different times. Strategic decisions are not comprehensively rational choices but are outcomes of processes governed by either a search for information that simply guides the process, organizational routines that prevent rational decision-making, and/or political power that influence strategic decision making (Trautwein, 1990).

Theoretically, the actual acquisition process could create firm value if carefully managed. Challenges are to: 1) ensure consistency with the firm's strategic direction, 2) follow a decision-making process, 3) integrate into the existing business, and 4) foster learning from the acquisition. Acquisitive takeovers can produce higher firm performance when management teams of firms that are under-performing are replaced because the acquiring firm can more efficiently manage the acquired firm's assets (Jensen, 1988 in Hitt et al, 1998).

Jemison & Sitkin (1986) have concluded that the lack of careful research attention to problems of post-acquisition integration appears to reflect the difficulty of recognizing the process itself as part of the problem. Recognizing the process as a key determinant of the outcomes allows one to glean process related impediments to acquisition success from the findings of previous scholars and practitioners.

A majority of studies have concluded that an acquisition is not a comprehensively rational decision. They found suppressed uncertainty, lack of planning, political influences, varying process participants, and no agreed upon acquisition criteria. It is precisely this chaos that theoretically benefits from process control when rational merger motives do not seem in place. However, despite the appealing nature of this argument, a lack of empirical evidence allows process theory to best be described as ambiguous (Trautwein, 1990).

Disturbance Theory

Another theory that may have some application to the merger patterns being experienced in the VHA system is disturbance theory. Gort (1969, in Trautwein, 1990) explains that merger waves are caused by economic disturbances causing changes in corporate and consumer expectations. For example, an economic recession will increase the general level of uncertainty and activity in all industries. And this level of uncertainty makes some firms view survival strategies such as partnering, sharing resources, or acquisition for the sake of simply becoming larger for security against competitors more attractive. Trautwein (1990) argues, however, that since most disturbances are of a sectoral nature, any economic disturbance should only result in a sectoral pattern of mergers and not be attributable to an industry-specific shift in

operations. Although Trautwein's reasoning dismisses this proposition as a comprehensive macroeconomic theory for a single industry behaving in a new way, the concept of economic disturbance seems relevant and useful when explaining the motives of the public health care sector as being influenced by the recent merger trend in the private market.

Similar to sectoral market disturbances, the "market failure" theory suggests that the optimal framework for organizing the buying and selling of goods and services depends on the characteristics of the transaction being undertaken. For some exchanges, the market is the most efficient mode of exchange. While for others, the market "fails" to achieve an accommodation with suppliers through long-term contracts and therefore "disturbs" transactions and causes the development of vertically integrated structures that incorporate the suppliers into the buyer's organization (Williamson, 1985, 1986 in Hurley, 1993). It is inappropriate to fully explain VA integration behavior by this theory since the market does not provide buyer and sellers relationships to VA medical centers. Further, the federal government will not create a public sector vertical value-chain to rival the private sector's established competitive advantage.

Resource-Dependence Theory

Autonomy in exchange relationships is defined as the organization's freedom to make its own decisions about the use and allocation of its internal resources without regard to the demands or expectations of potential linkage partners (Zinn et al, 1997). Changes in organizational structure or behavior may reflect accommodations intended to secure a stable flow of resources from the environment. In choosing an exchange

relationship, organizations balance the benefits of decreased dependency on the environment against the costs associated with interorganizational dependence. A firm may use an acquisition to buffer its core competence or to combine with resources from the acquired firm to make its core competence less subject to imitation. Ultimately, it may create co-specialized assets (Hitt et al, 1998). Alliances among organizations that share ideology or resource dependencies often emerge in response to environmental threats or uncertainty. An example of this in healthcare organizations is contract management. Contract managed institutions depend on outside expertise for executive leadership and operational decision-making, but remain autonomous in ownership structure and board control.

Strategic alliances are defined as cooperative arrangements that utilize resources and/or governance structures from autonomous organizations for the joint accomplishment of individual goals. Alliances were originally intended to provide nonprofit facilities with some of the advantages of centralized management without the loss of individual facility control. In alliances, independently managed hospitals are able to retain greater autonomy, while contract managed facilities relinquish more autonomy. Contract management is when a hospital hires outside management to provide comprehensive management of the hospital's operation. Asset ownership is retained by the managed hospital and the hospital board retains decision-making authority in policy matters. Contract management, however, is not necessarily a stable remedy or condition for a distressed or competitive institution. If one thinks of merging as a sequence of events that runs from "time" of anonymity to outcome, middle range types of formal combinations might be viewed as transitional steps between strictly limited (contracting) and more complete (merger) forms (Starkweather, 1971).

The findings using a theory, such as resource dependence, are scant but intuitively appealing. Zinn et al (1997) found that hospitals with greater resources and a more favorable payer mix are more likely to join alliances, an interorganizational form that minimizes the loss of autonomy. Those that join alliances are also more likely to have PPO contracts (compete on the basis of cost and quality and are more flexible) and a teaching affiliation. In addition, facilities operating in less favorable environments are more likely to be contract managed and less likely to be alliance members. For-profit systems may already be obtaining managerial resources similar to those from contract management, therefore obviating the need to enter into a constraining relationship. In summary, hospitals that have a greater dependency on public payment sources may choose a more constraining interorganizational relationship if it has the potential to stabilize resource flows from those sources (Zinn et al, 1997).

Conclusions from the Business Literature Theory

The compilation of merger and acquisition theories suggests that the current state of research in merger motives and design is not completely satisfactory. The most promising explanations (resource-dependence and process theories) have not been fully developed while the most popular ones (efficiency and disturbance theories) seem to have only very limited explanatory power. As Trautwein (1990) states, "the efficiency theory of mergers dominates the field of corporate strategy as well as the research on merger motives. The prescriptions for merger strategies generally rely on efficiency arguments, although these have been shown to have only little validity." Nevertheless, the efficiency theory provides an attractive language for "selling" mergers when one speaks of cost savings and increased quality.

Parallel bodies of research about mergers have developed independently in the fields of strategic management and finance. Various, and sometimes similar, conclusions in both fields support a lack of evidence on mergers as a strategic theory for improved operations (Lubatkin & Shrieves, 1986). Strategic management literature suggests that mergers, or certain types of mergers, may improve the performance of the acquiring firm. In contrast, the consensus of market-based performance studies appearing in the finance literature indicates that mergers do not lead to positive performance outcomes. Financial assessments have influenced the manner in which the market-based performance measures are constructed (accounting formulas, short time horizons, clean data from precise sampling timeframes, assuming a homogeneous population) and how these measures can be adapted to become more consistent with the strategic management paradigm. Strategy researchers usually focus on more than one test of performance applied by more than one category or organizational assessor over longer timeframes (Lubatkin & Shrieves, 1986). A paradigm of strategic management, for example, is that a corporate action such as a merger is the outcome of a series of related events or tactics where each increases or decreases the probability of the final outcome. Therefore, solely observing the returns associated with the final event (the announcement date, or legal transaction date) cannot assess the full performance impact of the merger. This comparison of literature highlights that there seems to be no common pool of expectations by which mergers can be judged.

Over the last three decades the early available evidence in the business literature suggested that, with the emphasis placed on the importance of profitability as a motive for merger, managers would be likely to perceive acquisitions as being

unsuccessful. These lessons can be applied to today. Past merger motives and results research are summarized in Ingham et al (1992):

- Meeks (1977) found that approximately 60% of the acquirers were reporting declines in profitability in the years subsequent to the merger. Before the merger these acquirers had been more profitable that the average for their industry.
- Newbould (1970) found that the majority of managers viewed mergers as unsuccessful.
- Cowling et al (1980) and Kumar (1984) examined the cost savings generated by mergers and concluded that "the general impression is that gains in efficiency as a direct result of merger do not seem to have been forthcoming in the majority of cases."

The major finding by Ingham et al (1992) may provide the best summary of merger motives. Their extensive survey concluded that it is the expectation of enhanced profitability, which seems to be the motive behind recent takeover activity.

From Motives to Structure: Business Literature's Typology of Integration

Industrial economic and organization theory has provided a foundation for identifying key strategic and structural components of newly emerging organizations. Management theorists have long recognized that integration, or the management of interdependence, is a key problem in organization design as the providers of services are largely differentiated and fragmented (Alexander et al, 1996). The majority of literature that addresses facility combinations strives to provide categories and definitions to the various forms and stages of integration. The term "integration" will be used as the broadest term of facility collaboration and to describe the VHA initiative. Most often the research identifies levels of collaboration, from more pluralistic stages of informal cooperation and shared services to an advanced state of formal organizational merger with single management (Capozzalo, 1991; Starkweather, 1971). A tightly integrated provider organization is characterized by having a single bottom line (net

income) and business decisions are made to optimize the net income of the entire organization, whereas a loosely affiliated provider organization preserves the economic independence of each affiliated entity and, to maximize its own net income, each entity logically minimizes its own cost structure (Ryan & Daugherty, 1997).

These levels of integration are often examined against either the criterion by which decisions are made to advance to more formal relationships or by the various dimensions of the environment and the organizations themselves that will be affected by such agreements. Cooperation obtains some reduction in uncertainty for the parties involved, but requires exchange of commitments as a price. Certain forms of consolidation (e.g. joint ventures or multi-hospital system affiliation) still control only a subset of production and service domains (Starkweather, 1971). Thus, in principle, fully merging entities should be more likely to experience a change in their operating practices owing to the comprehensive control of operating elements by the merged organization (Alexander et al, 1996). Most critics of integration ask whether the benefits of increased integration outweigh the costs of coordination, compromise, and control (Luke & Begun, 1996). The notion that all parties might gain by a situation in which the whole is greater than the sum of the parts seems particularly appropriate for the US health care system.

Despite the increasing number, frequency, and importance of merger and consolidations in health care, there have been relatively few large-scale, empirical studies on the phenomena. The need to undertake research that categorizes and classifies emerging health organizations is immense. Over the years, the most substantial quantitative contributions to the health services literature have been performed by relatively few researchers (Starkweather, 1971; Treat, 1976; Alexander &

Morrisey, 1998; Shortell et al, 1993b; Alexander et al, 1996). In contrast, research on newly emerging health organizations has thus far relied largely on case studies, which have at least provided valuable understanding of the motivations, strategies, and objectives of these new entities. The vast majority of literature on the topic is primarily descriptive accounts of individual hospitals or acquiring systems involved in a particular merger or consolidation. The articles are interesting as examples of lessons to be learned, but often their anecdotal tone and limited geographic and management application leaves many unanswered questions about the generalizability of the findings.

Bazzoli and colleagues (1999) offer a conceptual framework of three dimensions to classify health networks that will allow for an improved study of systems and their characteristics. The three concepts or continuums to define systems are:

1. *Differentiation* – the number of different products/services that the organization offers reflected in the development of specialized knowledge, functions, departments, and viewpoints.
2. *Integration* – the activities and mechanisms used for achieving unity of effort across the different specialized areas.
3. *Centralization* – the speed with which decisions get made, the ability to develop new products and services, and accountability to various stakeholders.

Multi-organizational entities must match appropriately the right levels of differentiation and integration to the demands of the environment. The authors hypothesize that integration can be achieved either through ownership of the various services and programs of the continuum of care of through contractual relationships. Rather than vertical or virtual, ownership-based and contractual-based are used because integration can also mean horizontal. Ownership-based can reduce transaction costs between separate production processes and can lower production

costs associated with achieving economies of scope and scale. Contractual-based provides increased flexibility to respond to changing market conditions and to offer opportunities for learning and building trust.

The key principle of integrated health care systems is the alignment of incentives to encourage cooperative rather than adversarial relationships between physicians, hospitals, and payers. In a fully integrated system, the three key players (physicians, hospitals, and health plans) are kept in balance by common management and financial incentives so they can match medical resources with the needs of payers and patients (Coddington et al, 1993). However, it is not necessary for an integrated system to own all of the resources it uses; it may achieve its objectives through networking or contractual relationships with other providers, community services, and health plans.

Typology of Integration: Horizontal

The literature most often defines integration as either vertical or horizontal. *Horizontal integration* refers to the linking of firms at the same stage of production in the same industry to increase the scale of similar operations (Starkweather, 1971). In health care, these relationships are best explained as hospital-to-hospital alliances and have been demonstrated by individual community facilities coming together to create formal relationships and for-profit "chain" corporations purchasing hospitals across the nation.

The 1970s and early 1980s were dominated by the horizontal integration of hospitals – both within local markets and national and regional consolidations. The objective was consolidation and realization of economies of scale and scope through

shared overhead facilities, including information systems, expensive capital equipment and personnel which was thought to lead to superior performance.

Horizontal mergers have been most frequent in the hospital sector, which has been the primary target of cost control efforts because the potential savings are greatest. Physicians have formed horizontal groups to take advantage of the savings available through economies of scale and the use of mid-level practitioners. Similarly, hospitals have formed joint operating companies or form alliances to reduce duplicate purchases of capital-intensive equipment, coordinate programs and right-size staffing. Where physicians, hospitals, outpatient centers and other providers are combined into one organization, incentives are created, at least in principle, to use the most cost-effective mix of providers and facilities. With competition on the basis of costs, eliminating unnecessary capacity and spreading fixed costs may be essential to survival.

Horizontal hospital integration was motivated by the challenge of survival, a reaction to an uncertain and complex environment perceived as hostile. For access to capital and other financial efficiency strategies, horizontal strategies theoretically benefit from economies of scale because similar units can integrate. However, some are not systems in an integrated sense, only conglomerates of unrelated service units. Technological advances in information systems had vastly increased the potential for efficient operation of large-scale networks. The high fixed costs of new information systems and the need to share information across different providers create opportunities to exploit new economies of scale and scope (Danzon, 1994).The striking thing is how horizontal systems have spontaneously emerged under economic and

technological imperatives, rather than in response to an academic or governmental paradigm (Flagle, 1992).

The advantages of economies of scale must always be considered in light of dis-economies of scale and coordination, or the need for increased control and assets required for managing larger operations. The optimum performance of a system's components does not necessarily imply an optimum performance of the system. Larger healthcare organizations often are not able to produce care at a lower price, or of demonstrably superior quality, than smaller, less integrated competitors. It is this contradiction that is often overlooked, understudied, and extremely difficult to measure. To date, formal multi-hospital systems have failed to demonstrate the predicted advantages of horizontal integration (Shortell, 1988).

A common argument by analysts of hospital mergers is that substantial merger cost savings advance the public interest. Cost is valued, in part, because quality measurements are still rather primitive, and valid discriminations based on quality are still difficult to make. The implicit assumption is that cost reduction, by definition, is good because it allows an institution to reduce prices. Colton & Colton (1998) offer an alternative theory that the "benefit" of reduced prices flowing from merger-induced cost reductions must be balanced against the "harm" of reduced service flowing from those same reductions to determine whether the total impact on consumers, including service reduction, is neutral or positive. They posit that reduced costs coupled with consistent service quality really involves situations in which both prices and service decline, but the impact on consumers is neutral because overall consumer satisfaction remains at an acceptable level. A rollback of service is economically justified when the costs that are avoided exceed the reduction in prices. For instance, the "service" provided to

consumers might include the promptness of care so that cutbacks in hospital staff would result in, among other things, longer waiting lines in the clinics and ancillary services.

Dranove and Shanley (1995) conclude that hospital mergers do not result in lower production costs, but mergers often are announced with promises of savings that draw support from the business community. Business and payers expect reductions in costs while healthcare providers often do not consider this an outcome of merger or consolidation. Wheeler and Zuckerman concluded from a 1992 University of Michigan study on mergers that "establish the potential for price reductions to purchasers" but don't guarantee such an outcome (in Greene, 1994). The CEO of a Virginia based medical center said "...we never promised discounts. We talked about increasing access, quality, and satisfaction from the merger. We've done that. If we gave discounts, we wouldn't survive" (Greene, 1994).

Typology of Integration: Vertical

Vertical integration is the combination or coordination of technologically distinct production (service lines) at different, but related stages of production within a single firm (Porter, 1980; Conrad & Dowling, 1990)). Vertical integration often occurs where markets for inputs or outputs are unstable or unpredictable. Porter (1980) also states that it represents a decision by the firm to utilize internal transactions rather than use market sources to accomplish its economic purposes. Specific to healthcare, vertical integration is the provision of all types and levels of care required by a population, is a local or regional concern, and is coordinated to be more efficient, effective, and of a higher quality than if separate (Nerenz & Zajac, 1991). These same authors argue that

the term vertically integrated may be a misnomer, vertically diversified would be a more accurate description.

Inherent in the concept of vertical financial ownership is the elimination of contractual or market exchanges and the substitution of internal transfers within the boundaries of the firm via internal development or merger (Mahoney, 1992). In the absence of transaction costs, vertical contracting can replicate the advantages of vertical financial ownership. Mahoney (1992) suggests that no firm will be motivated by all the potential advantages of vertical integration (reduced transaction costs, strategy, output/input price control, and uncertainties about input costs), but taken as a whole these advantages illustrate the broad utility of this corporate option and why it is increasing being applied in the market.

In industries other than healthcare, when either vertical or horizontal integration (but not both) is possible, vertical mergers often preempt horizontal mergers. The preemptive role of vertical integration is to be linked to the fact that horizontal mergers are largely detrimental for the vertically related nonintegrated firms (Colangelo, 1995). It may be that fostering competition for corporate acquisition helps avoid the most socially inefficient mergers and often actual integration takes place rather than other more indirect ways of vertical control. But in the healthcare industry, the general pattern has been that horizontal consolidation precedes vertical combination. Mergers of several like-firms are the vehicles for realizing economies of scale and for achieving greater control of market pricing. The "platform" of horizontal integration served as the take-off point for vertical integration: for example, hospitals acquiring their durable medical equipment suppliers and their "down-stream" providers such as home care.

The principal aims of vertical integration are to enhance coordination among the elements or stages of the production process and to control the channels of demand for, or distribution of, a firm's core services. In health care, the purpose of vertical integration is to enhance the comprehensiveness and continuity of patient care and to control the sources of patients or other users of a delivery system's services (Conrad & Dowling, 1990). The main environmental factors altering the interdependencies among healthcare delivery and driving vertical integration are: prospective payment , declining cost of information networking among providers, an aging population and increasing chronic illness, and the rise of managerial and governance structures conducive to shaping vertical integration (Conrad, 1993).

A popular response to stagnant revenues in the 1980s had been to invest in new, unrelated businesses that seemed to have brighter financial prospects than inpatient care, a tactic called "diversification strategy". Many new businesses never became substantial or profitable. The traditional business has been forced to subsidize the diversification venture – and enthusiasm for diversification dwindled by the late 80s. Diversification by operating units – in this case, hospitals – into services outside their current core lines of business and competencies for purposes of reducing their financial risk and gaining revenues is likely to be self-defeating unless it is backed by superior ability to coordinate care in and between those services along the continuum (Conrad & Shortell, 1996). So far, contracting or purchasing a vertically integrated structure has traditionally been a private healthcare sector mechanism for increasing managed care contracts by becoming a full continuum of care, administering the insurance component, controlling delivery variation and costs, and addressing access or availability problems.

There are two critical distinctions between vertical integration and the industry's diversification strategies of the early 1980s (Fox, 1989). First, diversification implies an explicit move away from a declining core business. In contrast, the whole objective of vertical integration is to support the core business. In fact, vertical integration does not create value in and of itself. Its value consists of the gains that is permits management to realize in the base business. In addition to strengthening the "traditional" business, hospitals' comparative advantage will rest with those organizations that truly integrate and coordinate the flow of patients through successive stages in the continuum of health services while reducing costs. Second, successful vertical integration need not involve complete ownership of a new business. Partnerships, joint ventures, and even contractual arrangements can often yield the same result.

Tighter linkages between different levels of care not only save transaction costs, but also should yield improved coordination and continuity of care. Vertically integrated health systems are characterized by strong legal and working relationships with physician groups. Health systems will profit most under capitation if their vertical integration strategy provides operational stability, a strong primary care physician base, efficient delivery of medical services, and geographic access to physicians. Health systems based on equity, staff and foundation vertical integration models will profit and grow under full-risk capitation best because they have one governance structure and a defined mission statement. Moreover, physician bonds are strong because these systems maximize physicians' income potential and control the revenue stream (Cave, 1995).

Starkweather and Carman (1987) hypothesized that with the emergence of a market orientation by hospitals as the industry moved away from regulation, a steady

expansion of services would occur and a shift from competitive behavior between physicians and hospitals has developed into instead competitive choice among health plans and employers. A notable feature was the relationship of vertical and horizontal integrations to each other: Stage I corporate reorganization and limited vertical integration provided the vehicle for horizontal integration in Stage II; then horizontal integration achieved a new critical mass and market dominance, yielding more vertical integration in Stage III.

But industry observers who are the most bullish on integrated delivery systems these days believe that a prerequisite to greater provider control is capitation, and that the secret to capitation is information management, outcomes analysis and a level of clinical efficiency providers have only begun to appreciate (Havighurst, 1996). Providers' are disadvantaged, as they don't have the economies of scale and the infrastructure to do a good job of capturing or developing these things. While the capitation arrangement provides an incentive to integrate and coordinate services to maximize results, many of the concepts of hospital networking, mergers, and alliances often touted for their likelihood of bringing economic consolidation make it more difficult for managed care to emerge as a competing entity. But unlike hospital consolidation (horizontal integration), such managed care networks have inherent advantages because of their geographic dispersion of members and the comprehensiveness of their services (Brown, 1996).

In contradiction to the positive effects of vertical integration, some strategy literature has said that vertical integration raises costs for several reasons. Managerial inefficiencies may develop because vertical integration creates complex problems of control and coordination and underutilized capacity may increase costs in some stages

of production if operations are unbalanced (D'Aveni & Ravenscraft, 1994 - pick additional references). Yet, an increasing body of literature indicates that there is substantial incentive for firms to vertically integrate. This depends on the type of production involved, the extent of transaction costs, the amount of specialized assets, the degree of market power at each stage of production, the ability to separate activities, and the amount of uncertainty concerning prices and costs. Costs can be decreased by avoiding market costs, eliminating the distortion in input costs caused by imperfect competition, decreasing uncertainty or asymmetric information and by protecting proprietary technology.

Economies of scope provide reasons why some types of diversification may be more profitable than others. Economies of scope occur when the cost of producing two outputs jointly is less than the total cost of producing them separately. Industrial organization theory predicts that market conditions, and not diversification, determine a firm's financial performance. Therefore, the influence of market condition variables on hospital profitability and risk should be analyzed. Clement (1987) found that diversification may be oversold to hospital managers as a means of increasing profitability as it did not increase hospital profit rates nor are the profits from diversification projects used to increase the hospital's internally generated capital. This is a substantial finding as the VHA allow any predicted, realized "savings" from facility integration to be reinvested into the facility and its programs - but little tracking has been done to determine whether his has happened. Clement et al (1993) also found that despite considerable resources devoted to non-hospital subsidiaries (either for-profit or nonprofit), they were not associated with the financial performance of the

consolidated hospital firm. Variables such as payer mix and bed count are more related to the firm's profitability because hospitals still remain the largest contributor to profit.

In a more positive light, D'Aveni and Ravenscraft (1994) concluded in their study that vertical integration results in economies even after industry effects and economies of scope and scale are controlled. Vertically integrated businesses economized on general and administrative, selling, advertising, and R&D expenditures but had higher production and/or bureaucracy costs and thus only marginally better profitability than nonintegrated lines of business in the same industry. The higher production costs were linked to only backward vertical integration - forward vertical integration was associated with lower transaction-related costs. Thus, evidence of both efficiency effects and bureaucratic costs emerged, with the benefits of vertical integration slightly outweighing its costs.

As a strategy to save troubled hospitals or systems, vertical integration is usually doomed since it is a "come-from-behind" strategy. This is because it is capital-intensive, takes considerable time to implement, and most benefits will take years to realize. Vertical integration has failed in other industries as well – such as steel, automobiles, energy and computers. The main lesson has been that integrated systems don't need to own everything. Instead, horizontal integration, an outright sale, or closure may be more appropriate. Horizontal mergers and acquisitions and other efforts to expand market share and power directly are likely to command far more attention and energy than efforts to achieve improved vertical integration – especially because horizontal is real rather than "virtual". As capital moves toward horizontal rather than vertical efforts, with the exception of attempts to secure ties with primary care physicians – perhaps this will be a step toward clinical integration (Zelman, 1996).

Typology of Integration: Virtual

In today's marketplace, the greater flexibility of less integrated systems as well as their ability to take advantage of excess capacity, is proving more valuable than the presumed potential of more integrated systems to coordinate care, integrate physicians, and align incentives across operating units and providers (Zelman, 1996). Already 15 years ago, Sauter (1986) proposed that if society needs to have some sort of collaboration occur to benefit from greater availability and viability of health services, pursuing only full horizontal or complicated vertical mergers may not necessarily be the best strategy for integrating organizations.

The research on network performance to date suggests that vertically integrated networks have limited ability to improve the financial performance of member organizations (Nauenberg et al, 1999; Moscovice et al, 1995). There are realizable benefits to be discovered from less structured, informal relationships and simply contracting for services. By exploitation of communication capabilities and the increasing knowledge bases evolving from research, the way may be easing for patient-centered integration and coordination of services without demanding integration in the sense of ownership or formal control of all the providers within a central organization (Flagle, 1992).

Zuckerman et al (1995) propose that this more loosely coupled organizational form be simply called "alliances". Alliances are designed to achieve strategic purposes not attainable by a single organization, providing flexibility and responsiveness while retaining the basic fabric of participating organizations. The basic aims of alliances are to gain competitive advantage, leverage critical capabilities, increase the flow of

innovation, and improve flexibility in responding to market and technology changes. Alliances require thinking in terms of "combinations" of firms, and may thus be able to secure the benefits of vertical integration, without the drawbacks associated with ownership. Successful alliances appear to have a couple of key ingredients; shared objectives (mutual need) and risk sharing (powerful incentive to cooperate for mutual gain). Encompassing almost all organizational forms, the authors propose that alliances can be categorized as either "lateral" or service alliances involving similar types of organizations, or they can be "integrative" organizations coming together for largely market and strategic purposes.

Various assessments of more and less integrated systems seem to reveal that individuals who perceive greater value in more highly integrated systems are placing more emphasis on performance, defined primarily as quality (Zelman, 1996). Initiatives such as physician integration, coordination of care over a continuum of services, clinical integration, expanded use of protocols and clinical guidelines are often the focus of pro-integration assessments and may certainly lead to improving efficiency and lowering costs. Their core value seems to have more to do with promoting quality of care for the individual patient than price reduction, however. By contrast, most of those who favor – or anticipate the dominance of – less integrated systems seem more focused on price as they promote staying away from costly investments in buildings, the need to expand or downsize quickly, and on the greater flexibility inherent in contractual relationships, even long-term ones.

Trying to focus on quality may create two other barriers for the integrated system. First, such systems may be disadvantaged by the predominance of employer choice. If purchasing power were in the hands of individual consumers, they might be

more attentive to quality and more willing to pay a premium for it. Second, integrated systems may be disadvantaged by the very modest capacity of purchasers to assess and compare plans on quality. Systems achieving quality that is defined by improved health status or outcomes, as an example, are getting little market advantage for having done so (Zelman, 1996).

Most integrated delivery systems haven't grown their market shares because there is no measurable economic or qualitative advantage to the employer, the health plan, or the patient from using such a system (Droste, 1997). The problem is that executives are stuck in the type of industrial thinking major corporations abandoned years ago. Corporations like IBM are reviving business through marketing agreements, licensing agreements, and strategic alliances. "It's more of a *connectedness* paradigm instead of an *ownership* paradigm. In many cases, owning isn't the most efficient way of getting what is needed to produce what people want to buy. This approach centers on virtual integration – asking "Does the market do it better or do I do it better?" (Goldsmith, in Droste, 1997).

Available evidence does not render a clear verdict on whether superior performance is generated by the virtual integration of strategic alliances and affiliations or the vertical integration represented by unified single ownership of all system components. Loosely coupled "virtual" firms are primarily regional and have encountered many of the same problems vertical organizations have such as: resistance of medical staff, history of local rivalry, differential perceptions of threat, poor strategic fit, reliance on weak structural arrangements, and value conflicts (Luke et al, 1998). Because Nauenberg et al (1999) study of network structure and hospital financial performance did not provide evidence to support the virtues of virtual over

vertical integration, the body of research on hospital financial performance and the structure of both managed care organizations and physician-hospital organizations may not be applicable to virtual networks.

The Private Market vs. The Public Sector

The literature on organizational mergers, with its focus primarily on for-profit corporations and their criteria and performance evaluation for mergers, does not provide much specific insight into the question of how to judge a merger in the public sector. This literature's primary concern is the identification of reasons a corporation might consider a merger and the development of mechanisms for weighing the costs and benefits through trade-off analyses (Sauter, 1985). It is, however, difficult to generalize these concepts and techniques to the public sector.

First, while many of the goals for merger are similar to those described previously, a public, nationalized organization has traditionally not been as directly subjected to market pressures and competing forces that require reductions in environmental uncertainties, increased market share, etc. With the increased pressure for accountability of tax monies, the differences between the public sector and private industry are beginning to narrow. Second, the perception of economic advantage may be a necessary, but not a singularly sufficient condition, for nonprofit entities to merge because their slow-to-change bureaucracy and funding buffer them from the volatility and fickle nature of the capital markets. And finally, the research literature does not often produce like-terms in measuring costs and benefits of for-profit and nonprofit mergers because of a vast difference in the financial and operational units in which the relevant quantities are measured and by which the organizations are judged.

Sauter (1985) theorized costs and benefits of public organizations as they move through the spectrum of merger. Like private organizations in society, public organizations would be expected to experience higher costs and lower benefits when totally autonomous. As collaboration and some affiliation occurs, organizations will begin to experience increased benefits but may often see a reduction again when they completely fuse with another organization if the entity becomes too large to work efficiently. If society needs to have the merger occur because of increased quality or access to services, then it must shift the pressures which are acting upon the public organization by either increasing perceived costs of not merging or through a combination of decreasing the perceived costs and increasing the benefits of merging. The easiest way of improving the net utility of structural decisions is to take advantage of natural occurrences in the organization's relevant "partnering" environment. By coordinating with regional facilities, this could minimize the costs associated with purchasing, processing, and distribution as individual units; stave off the loss of volume due to competing private facilities or changing delivery patterns; or validate politics and national sentiment regarding the role of the federal government in building and using tax-sponsored facilities to provide care.

The ultimate organizational goal of any integration process, public or private, is to prosper, while society's expectation is to benefit from lower costs and greater availability of services (Shortell et al, 1996). But for individual facilities, operational integration most likely becomes a source of resources - a way to capture and retain revenue (usually, patients) - rather than a means of accomplishing a social goal. The only way to redefine this institutional benefit to a social goal is by means of staying operational and thereby providing better access to services for the population. But this

is counter to consolidation. There is a very logical and intuitive disconnect in applying merger, a primarily market-based strategy, to the public sector, when the public sector's mission is to be accessible to hard-to-reach and treat patients. The VA's serves veterans who otherwise would not be well-received in the regular healthcare market due to diagnoses difficult and expensive to treat and serves them in locations deemed often deemed undesirable. Because of these fundamentally different approaches to its customers, the public sector (VA) may not respond to economic merger benefits. There may still be opportunities for quality improvements if integration can create a system that performs more appropriately and speedily for the resources spent, however.

Healthcare Literature Review

Health Care Industry Trends

Over the past few decades, the healthcare industry has followed the lead put forward by the manufacturing industries and is consolidating and coordinating their stream of "production" capabilities. Although most other industries determine whether "value-adding" strategies increase shareholder wealth, in health care's public and private sector the definition must be broadened beyond narrow economic dimensions to reflect the net health-status benefits to the public served as determined by its "shareholders" such as the employers, governments, managed care organizations, and patients themselves. Whether the public or private sector is providing the health care, the same pressures reach into each market. Outputs are ambiguous and difficult to measure, with a high need for specialization and the tolerance for error being very low. Perhaps the most important issue relating to the differences between healthcare and

other industries revolve around the behavior of insurers, and the evolution of insurance companies' behavior helps explain the recent hospital consolidation movement. We are unable to presently answer the value-added question of merger directly because of our inability to measure health benefits, particularly at a community-wide level (Shortell, 1988; Walston et al, 1996; Bogue & McCue, 1996).

There are several historical trends of growth and expansion that are pertinent to mergers in health care (Dobson, 1987):

- Reimbursement, coverage, eligibility, and health care insurance administrative policies
- Supply of hospitals and the supply of physicians
- Public programs, particularly Medicare and Medicaid
- Health services research and its influence on public policy as it relates to a favorable merger environment.

Diverse parties have assessed the motivations for hospital consolidation very differently. Hospitals that are merging claim that their primary motive is to improve efficiency and control quality. Among the possible benefits cited by instigators of mergers are "cost savings from economies of scale and elimination of duplicative services; reduction in unused capacity through pooled staffing: improved management and production processes; better access to capital; quality improvement from higher volumes of specialized procedures; and broader geographic coverage" (Levitz & Brooke, 1985). If these benefits do occur, the transfer of savings should, theoretically, result in reduced prices to buyers. But critics claim that consolidation is aimed at eliminating competitors, not reducing prices, and that the mergers will simply have anti-competitive effects (Goldberg, 1999).

In the 1970s, a massive state and federal regulatory apparatus was created to carry out health planning and to determine the need for hospital facilities. This

regulatory effort was undertaken on the assumption that consolidating certain types of facilities could yield a large saving without reducing the quality of care. Overall, the expected savings fell far short of guidelines established by the Department of Health and Human Services because most early consolidation efforts focused on the closing of rooms, wards, or services rather than entire facilities (Schwartz & Joskow, 1980). Having learned from this experience, they conclude that only by reducing the demand for services will substantial savings be realized.

Some of the current consolidation is being driven by allowing market forces to reduce capacity, which provides a balance to supply and demand that some find more agreeable than outside influences such as government mandates. Some fear that taking a purely numeric approach to reducing beds will leave gaping holes in the system – holes that not only reduce access to patient care services but, in the case of teaching hospitals, compromise the training and education of tomorrow's care-givers (Cerne & Montague, 1994). However, downsizing based on economic considerations alone could create a two-tier system of care, as outlying communities lose hospitals and patients are forced to travel longer distances.

The following discussion helps to answer some questions as to why various measures were chosen for testing in the model of this research. Particularly, performance measures such as operating expenses and staffing ratios for multi-hospital systems are discussed below, explaining why study of them is relevant when testing for the VA's operational effectiveness of integration. The brief section on academic medical centers is also included because of the extreme pressure the healthcare industry is saddled with in providing training and research for our nation's clinical residents and the way this impacts financial performance. The challenge to

keep these institutions viable is all the more significant for the VAMCs given their pivotal role in medical education.

Financial Performance: Trends and Measurement

The lack of national health care system financing and consistent delivery and access policies have often been cited as the cause of the uncertain and volatile environment for hospitals leading to massive amounts of structural change. There are unprecedented levels of financial pressure in the hospital industry as public payers limit spending while private payers demand discounts.

Measures of financial performance indicate whether the company's strategy, implementation, and execution are contributing to bottom-line improvement. Because traditional financial measurement variables have sprung from the finance function (i.e., operating margin or debt to equity ratio), the systems have a control bias. Critics argue that the terms of analysis should change and that traditional financial measures do not properly measure customer satisfaction, quality, cycle time, and employee motivation – the real actions fundamental to bottom-line improvement (Kaplan & Norton, 1992). If improved performance fails to be reflected in the bottom line, executives should reexamine the basic assumptions of their strategy and mission – since not all long-term strategies may be profitable strategies. For instance, in terms of facility integration, excess capacity must be either used by boosting incoming patients or eliminated by reducing expenses if operational improvements are to be brought down to the bottom line.

Many hospitals face financial pressure and occasional or chronic losses, but closure is not a frequent outcome. Between the years of 1984-1987, Duffy & Friedman

(1993) found that only 10% of hospitals with a 5-year record of chronic losses closed. However, financial pressures have been particularly severe for hospitals that serve as safety nets for the poor and indigent in inner cities. These institutions face scarcity of higher-paying commercially insured patients, a high volume of uncompensated care and a shortage of qualified health professionals (Gautam et al, 1996). However, hospitals surviving with persistent losses did not respond in ways that suggest severe and immediate deterioration of access to, or quality of, care. They also did not admit patients selectively to reduce the percentage of severely ill or poorly insured patients, nor did they lose a substantial number of physicians to more financially sound hospitals, cut back LOS, or change to a less expensive mix of nursing staff. They were, however, more likely to become managed by contract, signaling a potential desire to become more efficient (Duffy & Friedman, 1993).

Hadley et al (1996) found that hospital performance is systematically related to financial pressure, resulting from either low profits or highly competitive markets. Hospitals with low profits responded primarily by constraining the growth of costs and inputs, and, by doing so, reduced their average level of inefficiency. Secondly, there was no evidence to suggest that cost-shifting strategies that might protect hospital revenues in the face of financial pressure were undertaken successfully.

Chronic financial losses appear to have long-run effects on technology investments and physical plant – which may affect access for patients who are unable to travel to other facilities for certain services. Paradoxically, the profitability of inner-city hospitals appears positively related with technical complexity of care (Gautam et al, 1996). Therefore, it may be more valuable to set targets such as maintaining access to

basic care and advanced technology rather than keeping revenue margins above an arbitrarily level (Duffy & Friedman, 1993).

Where hospital management, physicians, and governing boards used to operate as a "three-legged stool" – needing each other but often working with competing sets of objectives, today's increased revenue pressures has reversed the often adversarial relationships and put them on the same side against the payers. In the early 1990s, a structural and operating strategy was for hospitals and physicians to come together legally to form a physician-hospital organization. Advocates believe greater integration of hospital and physician activities would lead to a tighter coupling of interests and will bond physicians, both psychologically and financially, to the hospital (Alexander & Morrisey, 1998). And secondly, it was assumed this type of physician integration will enable hospitals to exercise greater control over costs. The hope is that since physicians control so many patient care decisions that influence costs, hospitals that achieve strong integration of medical and administrative goals should receive greater clinical staff cooperation in containing costs, changing utilization patterns, and possibly limit expensive procedures (Goes & Zhan, 1995).

Goes & Zhan (1995) tested longitudinal relationship between hospital financial performance (profitability, occupancy, and costs) and three hospital-physician integration strategies (governance, ownership, and financial relationships). Physician governance was associated with greater occupancy and higher operating margins, while financial integration was related to lower hospital operating costs. Direct physician ownership, particularly in small hospitals, was associated with lower operating margins and higher costs.

In addition to the discussion on physician-hospital integration, Conrad et al

(1996) studied the direct and indirect impact of managed care on the "black box" of hospital efficiency. The intent was to isolate managed care's effect on costs per inpatient discharge. These authors determined that inpatient resource use efficiency was improved when managed care plans and hospitals shared information on resource consumption with clinicians.

Despite the resources that have been devoted to hospital *corporate* restructuring, there has been almost no systematic empirical study of the financial consequences of this organization innovation. As noted above, study of hospital financial performance typically continues to be limited to study of individual hospital performance rather than that of a larger system or firm as a whole. However, something can be learned from the experience of business firms that have restructured. Similar to hospitals, those businesses once organized functionally but now quasi-autonomous or multidivisional, have better financial performance as they free top management to do strategic planning and they facilitate efficient allocation of capital within the organization as they compete internally for it (Clement et al, 1993).

Profit vs. Nonprofit Hospitals

For many voluntary and government hospitals the ideas of networking, alliance building, mergers, and vertical integration are bound by expectations of what managed care and investor-owned institutions will do with presumed unlimited access to new equity capital because of merger. This threat has been a powerful motivator for nonprofits to find competitive strategies for coping – ranging from loose affiliation to total consolidation under single ownership (Brown, 1996). Recent merger activity is moving more toward nonprofit organizations than toward for-profit organizations.

Whereas in 1994 only 36% of hospital buyers were nonprofit organizations, in 1997, 75% of the buyers were nonprofits. Moreover, almost 73% of the acquired hospitals were nonprofits in 1997. In many instances, merging overbedded hospitals has been the only way to preserve patient care in a community, and trustees of some not-for-profit hospitals have risen to this challenge (Kassirer, 1996).

Some have argued that the relentless pressure to build regional systems of health services has transformed the industry from a charitable, community orientation to one of business, market share and profits. Market factors are elements beyond the control of the hospital, while management factors are all elements of operation over which administrative and clinical agents have control. Alexander and Morrisey (1998) found that a non-profit system will analyze the same market and management factors considered by investor-owned firms, but the weights that they attach to particular market factors will differ when their missions differ from the investor-owned systems. Stated more clearly, non-profit systems will be more likely to acquire hospitals in unfavorable markets due to mission than will strictly profit-maximizing firms. These non-profits are usually assumed to maximize different utility functions, while being subjected to a minimum profit constant (Hadley et al, 1996). Their possible "utility" functions include size, teaching, community service, prestige and profit, but it is not fully clear, how taken together as a whole, utility function is being maximized. Because of a lack of particular "owners" in a non-profit arrangement, one might argue there might be little penalty for being inefficient.

Similar to for-profits, nonprofit hospitals sought out horizontally-aligned partners based primarily on commonality of mission, to obtain capital more readily, to contain costs through functional economies of scale (i.e., bulk purchasing), to gain greater

political clout and cater to top-level executives, and/or to react to pressure by the market for increased volume and fuller services (Whittaker, 1981; Shortell, 1988; Alexander & Morrisey, 1998). But a 1987 study conducted by Shortell and colleagues found that although socio-demographic variables accounted for most variation, non-profit system hospitals offered significantly more unprofitable alternative services than not-for-profit freestanding hospitals – while investor-owned system hospitals offer far fewer. Charity care was provided in fewer system hospitals when located in "collar-county" or rural areas compared to non-central-city urban areas. And finally, the greater the white collar and health professionals in the labor force, the less the charity care provided.

McCue & Clement (1993) found that for-profit organization hospitals had significantly higher net revenue, lower salary expenses, and higher profits than nonprofit hospitals. These hospitals had fewer full-time employees per adjusted inpatient day and per adjusted discharge. The higher prices and operating margins of for-profit hospitals belonging to investor-owned systems reflect the profit-maximizing goal of their management. Despite these advantages, the ability of for-profit organization hospitals to achieve economies of scale in expenses was not evident except in the case of salary expenses.

Empirical findings of Catholic community hospitals in 1989-1992 indicate significance changes in financial, operational, and facility profiles from the situation in 1986-1988 (Prince, 1994). Mergers, closures, and consolidations have had a major impact in the 1990s in eliminating some differences between catholic and nonprofit community hospitals. However, after controlling for state, urban-versus-rural location, and bed-size range, the study documented that the average 1992 Catholic hospital was

less profitable, with older equipment, and treated more Medicare patients than the average matched community hospital. Economic costs associated with the current geographic distribution of community hospitals within many Catholic health care systems is a major factor for some of these financial differences in average profiles.

Even more recently, a comparative analysis of for-profit and nonprofit hospitals in Virginia found that for-profit hospitals had higher profits, despite higher labor costs and capital costs, due to better revenue management (i.e., attracting and treating more privately insured patients) rather than due to expense and efficiency management (Shukla et al, 1997). In fact, there were no significant differences between the two groups on efficiency and productivity indicators. In spite of all the changes in the US healthcare system in recent decades, the results of this study of the differences between acute care NFP and FP hospitals are strikingly similar to the results from similar studies conducted during the 1970s and early 1980s (Shukla et al, 1997).

The increase in non-tax setting mergers may represent growth maximization on the part of acquiring firms, or it may represent improved efficiency as a result of the merger (Bacon et al, 1992). It is usually difficult to disentangle the effect of these potential motivations because the data utilized in many empirical studies do not lend themselves to tests that can discriminate among the potential factors that motivate managers and owners to seek out mergers.

The Evolution of Multi-Hospital Systems

A practical example of healthcare-specific merger trends and the variables that have an impact on their success can be witnessed in the emergence of multi-hospital systems. Primarily in the 1980s, the growth of these systems was encouraged on the

traditional assumption that economies of scale in the concentration of human, financial, and other operating services enable system-affiliated hospitals to realize significant performance advantages over freestanding institutions. Through the combination and consolidation of their human and capital resources, multi-hospital systems were thought to have the potential to achieve enhanced levels of performance in the critical areas of management depth and capital acquisition. Theoretically, increased size and scope of operations through centralization should enable systems to enhance their productivity through increased coordination of activities, specialization of personnel and equipment, standardization of manpower staffing and other procedures based on system-wide experience (Levitz & Brooke, 1985).

Initially, large, freestanding, full service hospitals joined a diverse array of alliances, joint ventures, consortiums, networks and systems. Although the for-profit chains started combining full service with strong financial gains in the mid-1960s, it wasn't until the mid-70s that local and regional nonprofit system growth occurred.

In the early 1980s, several federal responses to growing healthcare expenses forced hospitals to re-examine their strategies for success and even survival. After antitrust legislation no longer allowed hospitals to assign market and roles and Medicare payment was revamped from cost-basis to prospective payment, the delivery of health care began to shift from an acute care focus to a variety of medical ventures in which the hospital was only one part. These changes in the system stopped the rampant growth of the for-profit chains and they started selling rather than buying these capital-intensive "cost centers" (Schwartz & Stone, 1991).

From 1980-1992, the healthcare industry averaged about 16 mergers each year, according to the AHA (Greene, 1994), involving more than 400 hospitals merging

into 210 hospitals. In addition, a drop in inpatient days per thousand population – from 700 to about 350 – has increased the pace of mergers. About one-third of mergers were in small or rural markets – making it especially difficult for these hospitals to reduce staff to efficient levels or to close one of the hospital facilities. High managed care enrollment stimulated consolidations in larger metropolitan markets as well. In smaller markets, it evolved the opposite way, with hospitals merging first and managed care working to catch up.

In the 1980s, about 80% of multi-hospital systems had fewer than eight member hospitals and about one-half of all systems had either two or three member hospitals. Small, locally oriented health care systems were the most common type of multi-hospital system. Of the 100 not-for-profit, non-church systems, 90 were comprised of two to seven hospitals. Even in the investor-owned segment, 55% of systems were "small" by the same criteria.

Shortell et al (1987) found that urban hospitals' location was associated with greater alternative services provision, as was the number of inpatient services provided. In addition, they concluded that increased Medicaid eligibility and payment levels were likely to have a positive effect on the provision of services that were usually unprofitable. This study demonstrated that to ameliorate some of these market pressures, inner city, urban hospitals began to form partnerships for survival due to contracting and competition. In 1982, 19% of urban hospitals were in local combinations (defined as two or more in the same local system), compared to 28% in 1989 and 55% in 1996. In 1996, 40% of urban hospitals were joined strategically with other hospitals via alliance rather than merger or acquisition though (Luke & Begun, 1996).

Despite a lack of empirical research and tangible benefits of previous experience, hospitals continued merging in the 1990s at a record rate. In 1994 alone, 674 US hospitals were involved in mergers and acquisitions, as compared with fewer than 60 in each of the previous three years (Kassirer, 1996). By 1997, merger deals more than doubled from the number just three years earlier. Maybe because past deals haven't met expectations and are not generating the savings and the negotiating power originally hoped for, fewer hospitals are consolidating and merging very recently. Healthcare mergers and acquisitions were down 42% in Sept 1999 compared to 1998, from 280 deals to 163 (Bellandi, 1999).

Morrisey and Alexander (1987) claimed that the conclusions of the literature rested upon the assumption that that system participation is the result of some random selection process entered into by hospitals and/or established systems. They state that hospitals do not randomly enter into a MHS, but opt for these arrangements due to a variety of management and market conditions, or boost revenue generation through added programs such as durable medical equipment services and clinical trial participation (Morrisey & Alexander, 1987; Zuckerman & D'Aunno, 1990). But even the sometimes suggested benefits of merger may have little association with conditions that dispose hospitals to join or be selected by systems. Today's alliances, for the most part, consider competitive advantage as a major deciding factor in admitting members and designing programs. Equally important, acquiring and acquired hospitals reap different benefits from participation. Hospitals can signal quality by joining alliances that have other prestigious hospitals as members (Zuckerman & D'Aunno, 1990).

How are Multi-Hospital Systems Faring?

In a study of 94 acute care general system and non-system hospitals in Iowa, Levitz & Brooke (1985) found that financial performance was better for system-affiliated hospitals in the areas of enhanced capital acquisition, a more sophisticated pricing policy, and relatively more favorable profits. Those hospitals did, however, have higher costs per case, which were related to longer lengths of stay and less productive use of plant and equipment. Freestanding hospitals appeared to be managing their receivables more effectively with considerably lower bad debt, while receiving higher percentages of revenue from self-pay patients. Although the differences in observed performance between system-affiliated and freestanding hospitals appear to provide some support for the generally acknowledged superiority of multi-hospital systems in the critical areas of management and capital acquisition, this study does not confirm the assumption that system-affiliated hospitals have a marked advantage, an assumption which underlies much of the largely testimonial literature on the subject.

Shortell (1988) found that multi-hospital systems have primarily served as a defensive reaction to environmental forces and, therefore, did not achieve their stated objectives or added significant value (benefits greater than costs). Rather than by economic benefits, systems are often unfortunately characterized by an increased number of management levels, higher-paid executives, greater dependence on expensive external advisors, slower decision-making, and systemic problems with health professionals. To the extent that such predisposing conditions and selection factors are not adequately considered, the comparisons between system and freestanding hospitals will most likely result in finding no difference between the two.

In 1990, a study was conducted for Modern Healthcare exploring the financial implications of hospitals before and after mergers since PPS was implemented in 1983 (Greene, 1994). The study found that merged hospitals didn't pass on efficiency gains to consumers in the form of lower prices. In fact, on average, the 18 merged hospitals increased their prices a total of 9% two years after the merger, compared with a 1% increase the year before the merger. These post-merger price hikes came even after adjusting for inflation and severity of illness – and after experiencing efficiency gains. In fact, as merged hospitals increased market concentration, they commanded greater market power and were less inclined to deal with businesses or payers seeking discounts (Greene, 1994).

Because insurance companies and managed care organizations aggressively sought discounts from hospitals and reduced lengths of stay, hospitals further reduced capacity needs. But when merger activity in St. Louis and Philadelphia was examined, a recent study found that neither the mix of hospital services nor hospital capacity had changed much, despite numerous hospital consolidations (Blecher 1998).

Conclusions on Multi-Hospital Systems

Hospital mergers and consolidations held out the promise that if the number of owners were reduced, then hospitals could plan more rationally and reduce the duplication of high cost technologies in individual markets. Despite the promise multi-hospital systems have been perceived to hold for administrative coordination and operational efficiencies, research has not shown that organizing hospitals in multi-hospital systems results in lower health care costs. Other benefits may exist. Extensive organizational changes may facilitate reductions in a market's excess capacity,

reconfiguration of the mix of local services, and the creation of new and stronger networks of consolidated capabilities (Bogue et al, 1995).

Zuckerman (1997) claims that few systems have begun to make the hard decisions that are critical to effectiveness and competitiveness on quality. In addition, there is little evidence to suggest that these larger organizations materially improve the quality of care. In fact, quality of care often declines in these larger, more impersonal organizations, in which leaders and decision-makers are increasingly removed from the customer.

Many of the hospital companies that have been active in the merger and acquisition arena can be expected to continue building alliances in order to complement their local systems. Priority is being given to identifying and implementing those mechanisms and processes that are required for ensuring continuity among partners and achieving the broader objectives of aligning incentives, missions, and cultures. Operational, and ultimately clinical, integration may have to await further refinement in approaches to achieving coordination, including technological advances in integrated information system development.

Academic Medical Centers

The high cost of AMCs reflects their mission and culture. Because of research and teaching roles, AMCs often epitomize the "technological imperative" - the desire to use all available technology. Furthermore, professional recognition and financial rewards accrue heavily to specialists who are pioneering in their respective fields and who are renowned beyond their institutions. The teaching function reduces clinical productivity, although residents in their third year or after may enhance clinical

productivity. Also, to meet its teaching obligations, the AMC is required to offer a broad range of services, irrespective of their profitability. Teaching hospitals' use of medical residents as a lower cost of labor source is often seen as contributing to the oversupply of physicians. Under Medicare's prospective payment system, teaching hospitals receive special Medicare payments to reflect teaching costs, although not usually enough to offset the greater expense. And finally, AMCs attract a sicker mix of patients because of their emphasis on specialty and tertiary care.

Despite their success, academic medical centers have surprisingly fragile economic foundations. Income from professional services and "transfer" payments from hospitals constitute, on average, 40% of every medical school budget (Iglehart, 1995). Only a few academic activities are financed through explicit sources, such as tuition, government appropriations, and grants. Given the rapidity of change in most regions, many academic medical centers will be forced to retool and downsize their operations, particularly their hospitals, and to place more emphasis on primary care if they are going to continue to compete for patients, and therefore, revenue.

As academic medical centers evolve to more closely resemble a competitive marketplace, many questions have surfaced about how society should pay for the public goods that academic medicine produces. The drive to lower general healthcare costs has resulted in a sharp decline in hospital use and has accelerated the growth of outpatient visits. Managed care's cost focus is especially hard on the nation's 400 teaching hospitals with all their extra expenses for doctor education and research. One of the responses to these changes has been to consolidate and merge with other academic medical centers to become more efficient and create better leverage against the health plans. But mergers involving teaching institutions are simply more complex

than those involving non-teaching facilities due to their mission, culture, special services, medical staff, public-sector politics, and the dean and clinical department chairs (Dickler, 1995).

An example of the complex and often volatile process was the 1997 proposed merger between New York University and Mount Sinai Medical Centers. With almost 2,300 beds and more than $2 billion in annual revenues, the combined entity would be a colossus, able to bargain powerfully with managed care and would be positioned as "an innovative model for the future of academic medicine" (Lagnado, 1997). Despite monumental market support, the deal collapsed as the doctors clashed over issues such as whose school and hospital would yield more authority, where classes would be held, and how to merge a culture of "academic stuffiness" (NYU) with highly-leveraged "glitter" (Mount Sinai) among other things (Lagnado, 1997). Ultimately the merged failed. Rather than a shining example of industry achievement, it became a case study for understanding obstacles to difficult academic mergers. Two months after this, the Beth-Israel and Long Island Jewish Medical Centers merger fell apart. However, the New York Hospital and Presbyterian Hospital merger and the Beth-Israel / St. Luke's / Roosevelt mergers were able to successfully integrate (Fein, 1997).

Conclusions on Healthcare Integration Results

Generally accepted at best as an operational strategy, and at worst as a financial failure, integration has most often not delivered on the rhetoric of improved economics and service. Lessons learned from all industries are relevant and prudent. Empirical evidence from outside health care suggests that the expected cost efficiency benefits of owned integrated structures have not been achieved. The primary objective

in the post-merger integration of operations is to make more effective use of existing capabilities. Merging firms should, theoretically, be able to reduce unit costs in production, inventory, marketing, advertising, and distribution integrating similar departments and functions (Datta, 1991). Some authors posit that integration increases some costs and is adopted for reasons other than efficiency, such as decreasing interdependencies or responding to institutional pressures to create legitimacy.

Multiple researchers have found, despite the projected benefits of this strategy, that acquisitions, on average, result in lower profitability and less satisfaction among top managers (Ravenscraft and Scherer, 1989; Porter, 1987). The cost of implementing integration can be substantial. Acquisitions increase the size of an organization and, therefore, distort. Further, organizations may away from their core business. Managerial inefficiencies may develop because integration creates complex problems of control and coordination among highly interdependent production activities. Impediments associated with the integration of operations can result in the firms not being able to manage the merger effectively especially when areas such as management style, reward and evaluation systems, and organizational cultures are incompatible and less flexible to respond to demand (Datta, 1991).

Ermann and Gabel's (1984) synthesis of past studies suggests that the strategies of hospital chains were consistent with the industry summaries. They report that hospital systems (no distinctions made between investor-owned and not-for-profit systems) tended to increase costs of care, particularly during years immediately following a merger; that they increased services and provided more ancillary services per case; that they marked-up services more than other hospitals; and that they appeared on average to have newer facilities. The authors also demonstrated that

systems did have somewhat lower staffing ratios, suggesting that there was more efficient use of personnel. However, system hospitals experienced increased cost of care due to investor-owned operation. This behavior is consistent with competition on quality (reputation) rather than price in a market of insured, price-insensitive consumers. These findings confirm the opinion that the major reason for most system affiliation may be for security and protection - not for the often stated objectives of greater market share, cost savings through consolidation, and improved customer responsiveness (Schwartz & Joskow, 1980; Alexander & Morrisey, 1998).

Manheim et al (1989) examine the effect of acquisition by one investor-owned chain on hospital costs and staffing. Subsequent to acquisition, hospital costs increased and staffing levels decreased, relative to competitor hospitals. Because investor-owned hospitals not recently acquired did not have higher cost levels than their competitors, the increase in costs appears to be due to factors associated with the acquisition itself rather than factors associated with being an investor-owned hospital. Independent hospitals that were acquired decreased FTE levels, relative to comparison hospitals, while chain acquisitions, with their already lower FTE levels, did not have further decreases relative to the comparison hospitals.

Current research also supports the lack of consistent benefit from merger and acquisition specifically in the healthcare industry (Alexander & Morrisey, 1998; Bellandi, 1999; Bogue et al, 1995; Clement et al, 1995; Coddington et al, 1996; Colton & Colton, 1998; Danzon, 1994; Goldberg, 1999; Shortell et al, 1987; Walston et al, 1996). Walston et al (1996) ask whether the unique features of healthcare themselves provide a basis for the creation of efficiencies through owned integration when such arrangements have generally not met with success in other settings. They and others

conclude that no research exists to support this position. Most of the evidence on health system performance is based on economic and financially related objectives. The following are some of the aggregate conclusions to date:

- Aside from savings in bulk purchasing, there is no evidence to support long-term economies of scale (Whittaker, 1981; Ermann & Gabel, 1984, Shortell, 1988).
- There is no consistent evidence that system hospitals operate more efficiently (i.e., lower cost per adjusted admission) or are more profitable than non-hospital systems (Ravenscraft & Scherer, 1989; Harrigan, 1985; D'Aveni & Illnitch, 1992).
- Adjusting for hospital bed size, there is no evidence that system hospitals provide a greater number of inpatient or outpatient services to their patient populations than non-system hospitals (Greene, 1994).
- No empirical evidence suggests differences in-patient care outcomes between system hospitals and non-system hospitals (Gaumer, 1988; Shortell, 1988).
- Alexander et al (1996) found that cost changes result from mergers, but they occur selectively and depend on the conditions of the merger. They also found that merger affects the rate of pre-existing trends.
- Bogue et al (1995) found a 9% cost savings from 11 mergers.
- Mullner and Andersen (1985) did not find any significant financial effects in 32 mergers.
- Greene (1992) found lower growth in cost per case but also increased prices in 14 hospitals mergers.
- Simonson and Zwanziger (1997) studied 23 CA mergers and found fewer beds, but higher prices.
- Connor et al (1997) analyzed 3500 hospitals in 122 horizontal mergers and found that hospital mergers produce average price reductions of approximately 7%.

An exception to the somewhat discouraging findings can be found in two studies published in the mid-1990s. A study by the Hospital Research and Educational Trust (Burda, 1993) did find lower costs among merged hospitals and the Health Care Investment Analysts (Greene, 1994) reported that hospital costs were lower after merger. Neither of these studies seems to be extensively quoted by the scientific community.

There have been several possible explanations for the mixed empirical evidence on hospital merger savings. One is that only certain types of mergers will produce savings, and the mergers previously studied have varied by study. Another possible

explanation is the extent of merger some institutions are willing to undertake. For instance, Scott (1995) polled 17 integrated delivery networks and found that while they quickly considered centralizing accounting and materials management, few are studying the consolidation of clinical services. This may tend to result in quick, short-term efficiencies, but may result in few long-term improvements. Competitive forces, such as the need to offer diverse services to insurers and the ability to compete with other facilities, may be driving network formation, rather than the desire to eliminate duplicative technology and realize tangible savings. The institution's financial matters most often shape decisions about service consolidation. However, the results differ significantly by hospital characteristics.

- Goldberg (1999) found merger-related price reductions to be greater for low-occupancy hospitals, non-teaching hospitals, non-system hospitals, and hospitals with greater pre-merger service duplication. Greater price reductions resulting from mergers were found in areas with higher HMO penetration.
- Burns et al (1997) found that increasing HMO penetration is associated with increases in hospital consolidation and "vertical" integration.
- Clement et al (1997) found that hospitals affiliated with strategic alliances may have gained market power but do not appear to have achieved significant economies.

A 1995 cross-sectional analysis of the financial performance study across strategic hospitals alliances (two or more hospitals that have come together in the local market to compete with other local hospitals) in all US metropolitan statistical areas found that only close geographic configurations offer opportunities for merger and integration benefits (McCue et al 1999). If so, this could produce a desirable tradeoff for the increased market power that consolidation produces at the local level. The researchers also discovered that neither strategic hospital alliance structure nor for-profit ownership were found to be related to the financial indicators, which suggests that the current trend toward centralized operations and governance within local

hospital collectives has not created added financial value. However, the authors note that added financial value might be observed if alliance experience were followed for a longer period of time than was possible in this study.

Health Systems Integration Study (HSIS): "Systemness"

Stephen Shortell, respected and prolific author on health systems, has said "a system is not merely an administrative structure, but a philosophy about how health-related services should be delivered. The partnering of America's hospitals is a reflection of the underlying uncertainty and pluralism inherent in the American health care system. Most systems have formed as a defense against an increasingly hostile environment and because of that, for the most part, they have not fulfilled their promise" (Shortell, 1988).

Shortell (1988) would argue that "systemness" (either horizontal or vertical) can be achieved primarily through decision-making and governance structures at the system level that supersede those at the specific provider or facility levels. Conrad and Shortell (1996) conclude that "systemness" has advanced to include *functional integration* – the extent to which key support functions and activities are coordinated across operating units of the system to realize the greatest value. Progress has also been made in *physician-system* integration with physicians being more economically and managerially linked into the organization. The greatest challenge remaining for system integration is to build *clinical integration* – the coordination of health services across providers, functions, activities, processes, and settings in order to realize maximum value for persons for whom the system has assumed responsibility.

In fact, Shortell places so much value on the concept and achievement of clinical integration that he proposes that horizontal and vertical integration be considered its subcomponents. Clinical integration entails the merger or consolidation of selected programs and services, the development of common treatment protocols for selected conditions, the development of patient management outcome systems, and the initiation of case-management programs - all of which require selected characteristics and benefits of horizontal and vertical coordination.

The Health Systems Integration Study (HSIS) defined what a truly integrated organized delivery system might be (Shortell et al, 1993b & 1994). An *organized delivery system* is a network of organizations that provides or arranges to provide a coordinated continuum of services to a defined population and is willing to be held clinically and fiscally accountable for the outcomes and the health status of the population served. This definition allows for a variety of contractual arrangements and strategic alliances.

Shortell and colleagues (1993a) produced a list of identified barriers to integration that help explain why systems aren't achieving spectacular results as promised. Many of these are lessons that could and should be applied to the VA. These six barriers include:

1. Too much emphasis on acute inpatient care and the outmoded hospital. A major symptom of continuing allegiance to the acute-care paradigm is the allocation of capital to inpatient care despite the strategies emphasizing managed care and primary care.
2. Performance appraisal and reward incentives that are still geared to the success of the individual operating unit rather than system-wide performance.
3. Overestimation of the extent to which patient care can be appropriately integrated within a geographic market. Opportunities for the ultimate, clinical integration, are largely determined by 3 interrelated factors. First, the location of employers and employees in a given market. Second, the distance patients are willing to travel for

primary care. Third, physician referral patterns. Experience suggests that anything over 70 miles is very difficult – and should be managed more as chains.

4. Failure to lay groundwork: some systems have entered the full risk business without having the necessary physician leadership, group physicians, or the necessary financial and clinical information systems in place to produce information required by purchasers.
5. Gaps in the information chain when linking patients and providers across the continuum of care.
6. Fuzzy boundaries and cloudy communication of the roles and responsibilities of the corporate office versus regional office versus operating units.

Overall, the HSIS study concluded that these systems did not demonstrate superior cost, quality, or access performance compared with independent hospitals. The systems focused primarily on creating administrative economies of scope and scale, engaged in diversification efforts that were largely unrelated to each other, and did not integrate pieces of the system to provide more cost-effective care (Shortell et al, 1994).

Shortell concludes that belief in the inevitability of systems - rather than hard, measurable economic advantages - are propelling system growth in healthcare. "There is little support for any of the alleged advantages of system hospitals relative to their non-system counterparts. Little, if any, economic or service 'value added' appears to be present" (Shortell et al, 1993b).

Chapter 3: The Veterans' Healthcare Administration

Mission

In contrast to private sector and managed care-influenced organizations, the VA has four statutory missions, each vying for attention and resources. While its **excellence of patient care** mission is the primary focus, it must be balanced with the three additional congressionally mandated responsibilities...

2. The VA is the central, main source for training and educating the nation's health professionals. 107 of the nation's 125 medical schools have affiliation agreements with 131 VA medical centers. The VA funds over 8,500 medical residency positions, approximately 11% of all positions in the nation. About 54,000 nurse, dentist, optometrist, podiatrist, PT and OT, psychologist, and other trainees rotate through VA programs.
3. The VA is congressionally mandated to perform biomedical, mental illness, prosthetic, rehabilitative, and health services research. FY97 totaled approximately $1 billion.
4. In 1982, the VA is designated the backup to the Department of Defense medical care system and to the Public Health Service and the National Disaster Medical System in times of natural and technological disaster.

Then and Now: Changing Needs and Service

Actions to improve the efficiency of the health care system, coupled with other changes in the health care marketplace, are reducing the demand for hospital care. If trends continue, 60% or more of community hospital beds and over 80% of VA hospital beds may not be needed in the next 15 years. In the future, where hospital closures are warranted , the VA will face additional challenges to ensure that veterans' hospital care needs are met through either community hospitals or other VA hospitals and that the effects on VA employees, academic affiliates, and the community are lessened. These issues are discussed below.

VA Patients

About 465,000 of the nation's 26.2 million veterans (1.8%) have service-connected disabilities that diminish their functioning by at least 50%. Of the remaining veterans, fewer than 10% currently use VA facilities for medical care. The GAO estimates that, in 1990, 90% of veterans had insurance coverage other than that offered by the Department. In FY 1995, only about 12% of the patients treated in VA hospitals received treatment for service-connected conditions. Another 28% had service-connected disabilities but were treated for conditions not related to that problem. The remainder, 59%, had no service-connected conditions; most of these patients were poor (Iglehart, 1996).

The VA fulfills its role as a safety-net provider for veterans without service-connected conditions only to the extent that space and resources are available after those with service-connected disabilities or injuries are treated. Historically, the department's budgets have been adequate to meet the demands of veterans seeking care for conditions not related to military service, but it has, at times, rationed the care provided by some types of specialists.

Generally, the VA's current eligibility provisions create uneven and uncertain access to VA health care and limit VA's ability to meet veteran's health care needs. Veterans with similar medical needs, service status, and incomes may get treated or turned away depending on what type of care they seek and where and when they seek care. Unlike private sector hospitals and providers, VA facilities and providers bear little financial risk if they provide 1) medically inappropriate care or 2) services not covered under a veteran's VA benefits. Unlike in the private health care system in which the

insurance company bears most of the risk, in the VA's system, the veteran, not the VA, bears most of the financial risk for health benefits (or being denied care if the VA runs out of funds). This frustrates veterans, who cannot understand what services they can get from the VA, and VA physicians and administrative staff, who have to interpret the subjective eligibility provisions (GAO/T-HEHS, 96-107, 1996).

One of the recent and successful VA initiatives has been the increase in new access points for veterans entering the system of care. VA medical centers must finance increased access within their existing budgets, generally requiring the reallocation of resources among current activities and services. However, the VA allows facilities to reinvest savings from facility integrations into areas of their discretion. Examples of reinvestment include buying equipment, building expansions or renovations, opening access points, and increasing specialty and subspecialty clinics (GAO/HEHS 96-121, 1996). Because VA facilities are essentially allowed to keep any funds they generate through efficiency improvements, it is difficult to understand the true changes that might be occurring due to any programs implemented at the facilities for further evaluation.

Between 1990 and 2010, the VA projects the veteran population will decline 26% - most notably among veterans 65 and under, from about 20 million to 11.5 million. By contrast, the number of veterans aged 85 and older will increase more than eight-fold. By 2010, this age group of veterans will make up about 6% of the total veteran population (GAO/T-HEHS, 96-107, 1996).

VA Structure

The VA operates 173 hospitals (most at about 50-60% capacity), 401 ambulatory care clinics, and 133 nursing homes and is the second largest national employer with 191,000 employees. Like the private sector, the VA has diminished the centrality of the hospital, making it "a component of a larger, more coordinated community-based network of care" (Kizer, 1998). In the last few years, the VHA has reduced its total number of acute care and long-term care beds by 2,294 (9.8% between FY1995 and FY1996) and increased the number of outpatient clinic visits by 2.4 million (9.4%). This has allowed it to reduce bed days of care (44% decrease between Aug 95 – Aug 97), resulting in a reduction in staff (8.1% decrease between FY96-FY98) (GAO/HEHS 98-48, 1998). As a result, the VA has achieved efficiencies by reducing personnel costs, paring its inpatient staff by a total of 3,436 full-time equivalent positions. In most cases, the efficiencies realized from increased outpatient care did not save tax dollars because hospitals are allowed to reinvest the funds to enhance existing services or to offer new services, notably primary care.

Many of the nation's hospitals – some say over half – will cease operations (GAO-HEHS 98-32, 1998). The private sector has closed hundreds of hospitals in the past 20 years. The VA, however, has not closed any hospitals despite declining utilization, choosing instead to reduce the number of operating beds or close particular services, such as inpatient surgery. The VA has taken over 50,000 beds out of service over the past 25 years but has not closed any hospitals because of declining utilization (GAO/T-HEHS, 96-99, 1996). Closing wards clearly results in some savings through reduced staffing costs, but this approach often leaves the VA operating only a small

part of most hospitals' inpatient capacity. And, with fewer patients over whom to spread the fixed costs of operating the facility, the cost per patient treated rises. As an example of the potential benefit, the GAO reported that the VA could save $20 million a year and care could be improved if veterans were served at one less location in Chicago (GAO/HEHS 98-64, 1998). This pattern of decision-making demonstrates that the VA's system historically has borne few of the risks associated with inefficient operating practices and, as such, has had little economic incentive to reduce costs through facility closure and contracting.

It may become less costly to close the hospital and provide care either through another VA hospital or through contracts with community hospitals. Until recently, VA's legislative authority did not allow it to contract for patient care services. But the expanded authority to contract for services that the Congress signed in 1996 allows the VA to contract with public or private providers, whichever is the lower cost of care, for services the VA does not offer in a particular geographic location. With this barrier now removed, VA is increasingly exploring options for contracting for both patient and non-patient care services (GAO/HEHS 98-32, 1998). But private market contracting entails some risk since allowing veterans to obtain free care through their local community hospitals will likely heighten the effects of eligibility expansions and increase future demand for VA-supported healthcare, offsetting any saving achieved through contracting. Generally, when the VA opens a new outpatient clinic, a large proportion of the users are new to the VA system. In addition, current VA users living near the new clinic tend to use VA services more often. Actions taken to improve customer service will likely attract new users (GAO/T-HEHS, 96-1107, 1996).

VA's Unique Role: Medical Education, Research and a Single Payer System

The agency plans to examine its commitment to graduate medical education and the training of some 45 other categories of allied professionals. The department has eliminated 250 training positions in non-primary care specialties (over 3 years starting in 1996) while also changing 750 others from specialty to primary care.

In addition to training more than a third of the nation's doctors and supporting more than $254 million in medical research, the VA's most important distinction may be that it is a single payer system, immune from the perverse incentives of third party insurance. Great Britain's National Health Service may be a close comparison to the VA. The top-down allocation of funds to the districts (which then allocate based on population and its health care needs) is an important characteristic of systemness (according to Shortell, 1988). The autonomy at the district level is analogous to system autonomy. But the presence of monopoly in Great Britain makes other comparisons difficult as medical risk is spread throughout the population, whereas if you trace the population at risk for high-cost healthcare in the US, that is who the VA serves - poor, male, and single.

Initially, other countries (i.e., Australia) opened their veterans' hospitals to non-veterans to build workload. However, doing this in any environment will create competition. Essentially, every new patient entering a VA hospital is a patient not served by a community hospital. And if the VA decides to directly compete with community hospitals, they will have to decide whether to adopt private-sector marketing techniques and improve amenities and offer discount prices to managed care plans. Because of this redundant competition, most countries that previously operated

separate systems for veterans (i.e., Australia, Canada, Finland and the UK) abandoned them when they adopted universal health insurance plans. But our veterans healthcare system continues to be well funded and supported by politicians to protect it. They believe, along with the veterans' lobbies, that veterans are served better medically through a separate system. In 1996, Kizer stated that "The climate in Washington is [about] efficiency and cost saving. Unless the VA can show progress toward that goal, we're not going to be a provider of healthcare in the long term. The VA must fundamentally change its approach to healthcare. The current system is a diamond in the rough, with the potential to be far greater than it is today."

A Decade of Change: Creating a New VHA

In the mid-1990s, the VA began to fundamentally change the way it delivers health care to veterans by increasing the efficiency of its health care system and improving access to medical services. The VHA is moving rapidly to implement several management initiatives simultaneously to improve the system; the extent of possible savings or a prediction of future costs is unclear. While the environment in which the VA now operates requires that greater attention be given to the financial management of the system, this should not be misinterpreted as a change in focus or a commercialization of the VA's mission. The VA has an obligation to ensure that taxpayer monies are well spent and that it is getting the best possible healthcare return on its resources. In addition, the Veterans Health Administration's philosophy of quality measurement recognizes the agency's moral imperative to provide America's veterans with care that meets accepted standards.

In 1996, the VHA's Under-Secretary of Health authored a directive calling for performance indicators of operating criteria to be developed and implemented that measure both effectiveness and efficiency for all VHA programs. The following is a list of assumptions made about the future of the VA healthcare system made by Ken Kizer, MD in FY1996's guidebook entitled "Prescriptions for Change":

- The role of the federal government in American society will continue to be re-evaluated, and competition for federal government funding will become even more intense than it is now.
- Most health care in the US will continue to be provided by the private sector.
- There will continue to be turmoil among, and consolidation of, medical groups, hospitals, health maintenance organizations, and other elements of the private sector.
- Managed care within integrated delivery systems will become the most common mode of healthcare delivery in the US.
- Technological innovations will continue to revolutionize clinical practice.
- Advances in information and communications technology and imaging systems will open new opportunities.
- Integrated information systems will be the key to future systems.

In 1996, the General Accounting Office (GAO/T-HEHS, 96-99, 1996) conducted an external assessment of the current VHA operations and request for budget. The GAO much criticized the VA for not assuming that any changes would occur in the efficiency with which it delivers health care services over the next 7-year period. They argued there are many opportunities to use lower cost service delivery methods, consolidate, and reduce non-acute admissions for example. and specifically found that:

1. The VA overstated its resource needs to meet its mandatory care obligations because its projections did not reflect the expected decline in the veteran population or the amount of discretionary care it provides. They overstated workloads, and they included uncovered services, service expansions, and services to non-veterans.
2. The VA could save billions of dollars by completing its planned efficiency improvements, which include using lower-cost methods, consolidation of underused or duplicate processes, reducing VA hospitals' non-acute admissions and days of care, closing or converting underused hospitals, and enhancing VA revenues from veteran and non-veteran care.

3. Traditionally, the VA has not given managers incentives to improve operating efficiency.
4. The veterans may be denied care because: VA facilities bear little risk when they provide inappropriate care; nor does the VA guarantee the availability of covered services.

In defense of the VA, the GAO acknowledges that VA medical centers frequently overstate the number of inpatients and outpatients treated and therefore the centers' resource needs because of the problem with veterans failing to keep scheduled appointments. Once an outpatient visit is scheduled, for example, the medical center staff enter it into VA's computerized records, and it is counted as an actual visit unless staff delete the record.

Starting in FY1997, the Department of Veterans Affairs began phasing in a new national resource allocation method, the Veterans Equitable Resource Allocation (VERA) system as part of its broader efforts to provide incentives for the networks and medical centers to improve operational efficiency and access. It provides more comparable levels of resources to each network for each high-priority veteran served than the system it replaced, which allocated resources primarily on the basis of facilities' historical budgets. Busy networks get more money, and more efficient networks have more funds available for local initiatives. VERA recognizes that networks are responsible for fostering change, eliminating duplicative services, and encouraging cooperation among medical facilities. This has resulted in a shift of millions of dollars from over-capacity cities like NY, Boston, and Chicago to Sunbelt areas such as AZ and Texas.

In a more recent report issued in April 1999, the GAO claims that the VA has done a better job at transforming its healthcare system. Over the last 3 years, the VA has enhanced benefits and served 500,000 additional veterans, while realizing a

revenue surplus of $496 million that remains available for use. This was accomplished primarily because management initiatives (such as shifting care to outpatient settings and reengineering administrative and clinical processes) reduced operating costs by $1 billion (GAO/T-HEHS 99-109, 1999). For example, between FY 1996 and 1998, the VA reduced inpatient workload by 38% and bed days of care per 1,000 veterans by 47%, allowing it to close 20,000 beds. However, in FY1999, the VA transformation appears to be losing momentum as no action has been taken to close underutilized hospitals and management has not sufficiently prepared for reductions in labor that the FY2000 budget assumes.

Responding to the Marketplace: Motives and Intentions

Kizer's fundamental goals in reconstructing the VA were to promulgate the decentralization of decision-making authority, adoption of new eligibility rules, revision of the funding allocation method, shift of care from inpatient to outpatient settings, enrollment of eligible veterans and assignment to primary care teams, and the consolidation of services across medical centers. It has been said that Kizer's mission was to transform a bloated bureaucracy into a modern, government-sponsored HMO capable of attracting veterans, civilian military personnel, and retirees (Poole, 1997).

To accomplish the transformation of the VA into a more modern, responsive healthcare system, Kizer (1996) outlined the following strategic objectives toward providing excellent healthcare value in the visionary book "Prescriptions for Change":

1. Restructure to facilitate the accomplishment of the new VA vision by means of consolidating top management from smaller, more local regional headquarters into Veteran Integrated Service Networks (VISNs) which encompassed broader,

sometimes even multi-state, groupings of facilities. Congress authorized the restructuring on September 5, 1995; 22 network directors were named on September 21, 1995; and the transition of operations from regional offices to the networks commenced in October 1995.

2. Reduce operating costs. Transition the hospital, bed-based system to an ambulatory care and seek legislative relief from arcane rules that hinder efforts. Develop protocols, case management, accessibility and improve staffing mix.
3. Provide improved services through better integration of VHA inpatient and outpatient resources and through increased functioning as a "virtual" organization. Negotiate for existing bed capacity in the community where needed and cost effective; get legislation to allow for contracting flexibility; develop strategic partnerships with other government providers, telemedicine, and the private sector.

    a) The VA has a long tradition of sharing agreements, partnerships and other alliances. For example, VA has nearly 700 sharing arrangements with Department of Defense medical facilities, and more than 100 VA medical centers are affiliated with medical schools. A small number of such arrangements exist with local and state government health agencies, the Indian Health Service and private providers. Kizer has also encouraged VHA directors to buy services from the private sector at lower costs when possible.
    b) Restructure institutions or their management, and groupings of facilities to reduce administrative costs and increase the proportion of resources devoted to direct patient care.
        - *Support facility management mergers and clinical or support service consolidations, as recommended by network management, where such would produce administrative efficiencies, eliminate duplicate services, or improve patient care.*
        - *Promulgate screening criteria for potential further realignment of facilities. VISNs should improve facility planning by assessing needs on a network rather than facility basis. This will allow hospitals serving veterans in the same geographic area to pool their resources and reduce duplication. (See Appendix 5 for a summary of Kizer's (1996) Criteria for Potential Realignment (CPR) of facilities and programs.)*
        - *Effect personnel policy changes needed to tailor VA's workforce to*

facility management integrations and program consolidations. This would reduce the fixed and variable costs of services directly provided to veterans.

4. Promote a VA culture of ongoing quality improvement that is predicated on providing excellent healthcare value. Performance indicators and operating criteria [will] be developed to measure both effectiveness and efficiency for all VHA programs. The measures would be tied to: the 4 domains of value (cost/price, technical quality, customer satisfaction, access); linked to the vision and strategic principles of the "new VA"; the use of existing databases whenever possible; and will be used in management's negotiated performance agreements. Measures that facilitate VA/non-VA comparisons for performance should be used when possible.

Applying lessons already learned from the private sector's experiences with managed health care, the VA immediately began emphasizing certain managed care practices, such as primary, outpatient, and preventive care, and de-emphasizing practices such as inpatient care. The VA implemented two key management strategies to support its healthcare reform efforts:

Strategy: Veterans Integrated Service Networks (VISNs)

Recent changes at the VA are starting to create the types of efficiency incentives that have long existed in the private sector. The most tangible sign of the changes underway at the VA has been the implementation of the Veterans Integrated Service Network (VISN) management structure. As part of a government-wide effort to shrink the federal government and reduce the budget deficit, the Veterans Health Administration has restructured its 950 facilities into 22 Veterans Integrated Service Networks (VISNs), with its emphasis on decentralizing day-to-day operations, pooling

and aligning resources with local needs, and improving customer service. The restructuring has shown promise for providing the management framework needed to realize the system's full savings potential. "Healthcare experts have called this restructuring 'bold', 'innovative', 'far-reaching', and 'a model for the private sector'." (Letter to NY Times, Jan 23, 1996 in Kizer, 1996).

Kizer placed great emphasis on sharing resources and economies of scale when creating VISNs. It is actually up to the VISNs themselves to explore new ways of actually delivering the care. VISN directors were charged with "creating a continuum of care through the more effective integration of the department's resources and contracts with private providers" (Kizer, 1996). To accomplish this goal, the VA holds network directors accountable for VISN's performance by using, among other things, cost-effectiveness goals and measures that establish accountability for operating efficiently to contain or reduce costs. Second, the Under Secretary of Health distributed criteria that guide VISN directors in developing the types of efficiency initiatives capable of yielding large savings, and he also gave VISN and facility directors authority to realign medical centers to achieve efficiencies (GAO/T-HEHS 96-99, 1996).

A warning summarized within the GAO's 1998 report on VA efficiency stated that those changes that are intended to improve efficiency and access could lead to outcomes that compromise care received by some veterans. The VA has developed some performance indicators for VISN directors such as patient satisfaction, efficiency indicators, and number of veterans served to ensure that service delivery changes do not compromise the appropriateness of the health care veterans receive. However, these indicators generally provide little assessment of the outcomes of program changes on veterans. The lack of adequate performance information may be hindering

VA headquarters' ability to take corrective action if networks' program changes are inconsistent with VA's organizational goals (GAO/HEHS 98-48, 1998).

Strategy: Integration and Merger

In response to payment reforms and declining demand for hospital care, community hospitals have increasingly joined forces with other hospitals to form alliances and networks either locally or nationally (horizontal integration); expanded their product lines to include other types of health care services to help generate demand (vertical integration); hired outside management to evaluate hospital efficiency; and improved accounting and information systems to identify and eliminate inefficiencies and unprofitable lines of business (GAO/HEHS 98-32, 1998). The popularity of mergers and takeovers in the private sector in the 1980s has prompted the government to adopt them enthusiastically in its drive to rationalize services.

Ironically, the VA healthcare delivery system was both horizontally and vertically integrated long before the concepts gained favor in the private sector. Although VA hospitals have been horizontally integrated under common central office management from its inception, the hospitals have largely functioned independently. The VA is, however, increasingly integrating its hospitals regionally and consolidating management and both patient and non-patient care services while expanding the range of services provided by community-based outpatient clinics. In addition, the VA, like community hospitals, is implementing new accounting and information systems to improve efficiency.

An internal VA Management Task Force predicted that in 1994 the VA could save up to $73 million in recurring personnel costs by integrating management of

candidate VA facilities. (The VA's FY1999 budget was approximately $17 billion and is fixed at that level through 2002). The Task Force recommended that the administrative and clinical management of 60 separate medical facilities be integrated into 29 "partnerships". It was expected that these facility "integrations" could reduce service and staffing duplication, integrate clinical programs, achieve economies of scale, and free resources in invest in new services.

After a clear directive was sent out that VAMCs should proceed with this new style of formal facility integration and even merger, many of the largest inpatient medical centers met with their regional network's administrators to determine how they could reap the hypothesized benefits while minimizing the increasing pressure to meet their yearly reduced budgets. As of March 1996, about 1/3 of the recommended inpatient, horizontal-style facility integrations from the internal VA Management Task Force had been approved. This involved fourteen facility integrations among thirty medical centers, taking place during the second half of FY1995 and the first half of FY1996. Between FY1997-1998, an additional 20 medical centers were involved in facility integrations. More integrations are in the planning stages without fully waiting to discover what the effect has been on those VA medical centers already undergoing facility consolidation and operational integration.

VA Facility Integration Defined:

Kizer (1998) described the overriding strategic intent of facility integration to create better ways of serving veterans with the VA's limited resources. Each integration varies to the extent it uses different ways to do this by improving management, clinical, and patient support services. These include:

- Unifying management by creating a single team

- Consolidating services by moving all employees and patients to one site
- Centralizing a service by moving some but not all employees
- Contracting out some services
- Reengineering service delivery.

Most VA integrations share common characteristics such as:
- Complementary missions
- One facility that is significantly larger than the others
- Only one or no facility(ies) with a strong medical school affiliation (GAO, 97-184).

Approved VHA Integrated Facilities

The following facilities were included in my dissertation as the 14 early VA medical centers that underwent formal, approved, facility integration to various degrees (in order of earliest approved date to latest).

Exhibit 2: VA Approved Integrations, 1995-1996

VA Healthcare System	Region	VISN	Integrated Facilities	Type	Year Approved
Palo Alto	West	21	Palo Alto Livermore	Complex General	1995
Puget Sound	West	20	Seattle Tacoma (Amer. Lake)	Secondary Psych	1995
South Texas	South	17	San Antonio Kerrville	Complex General	1995
Central Texas	South	17	Temple Waco Marlin	Secondary Psych General	1995
Connecticut	East	1	Newington West Haven	General Complex	1995
Northern Indiana	Central	11	Marion Fort Wayne	Psych General	1995
Western New York	East	2	Buffalo Batavia	Complex General	1995
Maryland	East	5	Fort Howard Perry Point Baltimore	General Psych Secondary	1995
Black Hills	Central	13	Fort Meade Hot Springs	Secondary General	1996
Chicago	Central	12	Chicago (Lakeside) Chicago (Westside)	Secondary Secondary	1996
Central Alabama	South	7	Montgomery Tuskegee	General Secondary	1996
New Jersey	East	3	East Orange Lyons	Secondary Psych	1996
Pittsburgh	East	4	Pittsburgh (Highland Dr) Pittsburgh (University Dr)	Psych Secondary	1996
North Texas	East	17	Bonham Dallas	General Complex	1996

Selected Pre-Integration Characteristics (FY1994)

The integration initiative brought together both diverse and similar VA medical facilities. Some of these facilities are relatively close together and therefore "compete" for veterans in a service area, while others are at such a distance that their patients would only travel to the other for a particular service not offered at the local facility. The exhibit below provides details that describe the dynamics of some of these relationships.

Exhibit 3: Pre-integrating System Characteristics

System	Similar/ Dissimilar	Inpatient admissions of largest facility	Ratio of admissions of smaller to larger facility	Extent of academic affiliation	Distance between each facilities in miles
Central Texas	D	7,408	0.58	E L L	31, 38, 40
Connecticut	D	7,330	0.37	E I	32
Maryland	D	7,154	0.27	E L L	15, 37, 44
New Jersey	D	9,626	0.39	E L	22
North Texas*	D	11,049	0.20	E L	35
Palo Alto	D	10,389	0.13	E L	32
Pittsburgh	D	7,776	0.44	E L	5
Puget Sound	D	8,967	0.27	E L	38
South Texas	D	13,014	0.27	E L	64
W. New York	D	8,469	0.12	E L	41
Black Hills	S	2,848	0.85	L L	80
Central Alabama	S	5,826	0.61	L L	54
Chicago	S	8,177	0.82	E E	38
Northern Indiana	S	2,418	0.78	L L	5

Adapted from MDRC "Analysis of Facility Integrations", July 1998, p. 6.

Notes:

Similar/Dissimilar: Based on size and service mix. Service mix is defined as general service, secondary services, tertiary, complex services, or psychiatric services.

Academic Affiliation: L = limited; I = intermediate; E = extensive, based on numbers in residency programs.

Pre-integration specialization: Non-acute beds include nursing home, long-term psychiatric or domiciliary beds.

* Data from FY 1993.

Chapter 4: Research Design and Methods

The nature of this study requires that an evaluation be performed on the medical center integrations underway within the national VHA health care system. If operational and administrative consolidation were accepted as a primary motivation for these integrations, we would expect to see some initial changes in operating practices in those institutions involved in consolidation or merger. In an effort to learn from the early effects of integration among the VHA medical centers in this process, it will be important to compare sites and control for the influence of overall size and location, delivery patterns, and secular trends.

Research Design

As Rossi & Freeman (1993) point out, the starting point for any impact assessment is the identification of one or more outcome measures that represent the objectives of the intervention. These authors recommend that a critical distinction be made between gross outcomes, changes in an outcome measure that are observed, and net outcomes, those results that can be reasonably attributed to the intervention and not to any other causes that may be at work. Net outcomes are much harder to determine due to the effects of other processes occurring at the same time for processes underway at the start of the intervention. Such processes are highly relevant to the study of integration effects within the VHA and will have to be thoughtfully considered when creating the conceptual model and research design.

This study's research intent is similar to earlier studies of integration (Treat, 1976; Whittaker, 1981; Mullner & Andersen, 1987; Alexander et al, 1996) but differs in

several respects. First, it applies the research and methodology to a very different market, the public sector. Second, it attempts to measure operating performance before the integration and soon after to determine whether merger is having a significant early impact on the operations of integrated facilities, or whether any changes are simply the result of secular trends. Third, it will take into consideration the influence of certain structural and market characteristics already in existence that may have more predictive strength about operational performance than formal integration does. And fourth, this study is different from others in that it gives consideration to the upheaval of organizational change on personnel and patients.

One of the most widespread quasi-experimental designs in social research involves experimental and control groups. The literature strongly suggests that when organizational events such as merger are studied, they should be categorized along a number of dimensions. These include: the type of integration or strategy employed by the acquiring firm (administrative, clinical), the time frame of the process (short term effects vs. long term effects), the market structure characteristics of the participating firms, and the relative size of the merging firms (Lubatkin & Shrieves, 1986). In studies of major administrative change like merger, it is best to seek out similar institutions not undergoing the same intervention from which to collect a similar "control" time series (Campbell & Stanley, 1963).

Most studies typically compare matched samples of system and freestanding hospitals to determine performance differences. This approach, however, is inherently biased as it assumes that hospitals randomly enter into an integrated system, a condition necessary for valid comparisons with matched, freestanding hospitals (Alexander & Morrisey, 1998). Morrisey and Alexander (1987) claim that comparative

studies of system performance should be reconsidered because matched sample studies may be missing significant differences in the performance of system and nonsystem hospitals. So even if matched samples are ultimately a better design, the addition of an unmatched or nonequivalent control group reduces the uncertainty of interpretation as compared to a design using only a single group. A nonequivalent control group design is used in this study. The more similar the experimental and control groups are in their recruitment, and the more similar the groups score on the preintervention comparisons, the more effective the control group is considered to be (Campbell & Stanley, 1963). Because the sample for this analysis includes all the operating VA medical centers, there is no random error from sampling.

Choosing an intervention such as integration also presents challenges. It is difficult to date strategic events precisely because they represent the outcome of a series of related events. Often, the problem can be minimized by manipulating the time horizon (Lubatkin & Shrieves, 1986). Recent finance research favors short time horizons because they may effectively isolate one particular event with a known date. It has been argued, however, that short horizons only after an event, while appropriate for assessing tactics, are inappropriate for assessing strategic acts because the flow of information prior to the strategic event cannot be dated precisely (Lubatkin & Shrieves, 1986). Therefore, a period of "clean data" (2-3 years before and 2-3 years after) helps to ensure that statistical analyses estimated over the full time period will best reflect the influence of the key intervention (integration).

While we are unable to "randomly assign" integration, the pretest/posttest nonequivalent control group design does help to control for some threats to internal validity including history, maturation, testing, and instrumentation.

1993	1995/1996	1997
O_1	X	O_2
----		----
O_3		O_4

The purpose is to determine whether $O_2 - O_1 >$ or $< O_4 - O_3$ due to the intervention "X". The two groups do not have pre-experimental sampling equivalence. Instead they constitute naturally delineated groups. They are not so similar that one can disregard the need to collect cross sectional comparison data prior to and after the intervening variable/event. This design gives greater confidence of interpretation since the experimental effect is, in a sense, twice demonstrated – once against the control group and once against the experimental values in its own baseline comparison (Campbell & Stanley, 1963). Any difference between the experimental group and the control group in rates of change should not be explained by the main effects of history or maturation since these effects would ultimately be found affecting both the experimental and control group.

The potential for the interaction between selection and integration indicates that the effect of integration may well be specific to respondents because of the inability to randomly assign integration. Because maturation is controlled for by using both a experimental and control group in this design, the difference in the selection of the groups operating in conjunction with maturation or regression may not account for an apparent effect. However, there still may be an interaction between the selection difference and history.

Selection effects are always present and pose a threat to the validity of any study. This design looks at the differences between an experimental and a nonequivalent control group at an aggregate facility level. The judgment of the size of

the difference is not easy to make since some variation is expected independent of the effects of integration and potentially due to omitted variables. This may a particular problem in this study since the population under study is small (low statistical power) and because all the VHA medical centers are under immense pressure to reduce their resource consumption, thereby potentially reducing the standard deviation or variance between the group means in total (a secular trend).

Data

This study uses facility-level data as its unit of analysis. Measuring the dependent variables at the medical, surgical or psychiatric levels alone would not have included all the facilities in the analysis for comparison as service type varies. Nerenz and Zajac (1991) make the argument for aggregate measures of facility performance by stating that:

1. Just as a system is a sum of its parts, measuring full facility performance is more than measuring the performance of the individual components.
2. A facility's interest in quality of care and the total health care needs of its customers extends beyond the quality of a specific service – but instead includes the quality of the integration and coordination of those services.
3. Access to services must be assured for the population for which the facility has accepted responsibility, rather than a subset of its customers.
4. Efficiency and quality are now measured as how services are combined to form a cohesive, effective pattern of care.

Sample

This study "sample" is actually a census including all 157 of the VHA inpatient medical centers in the Department of Veterans Affairs national Veterans' Health Administration health care system that were operational between 1993-1997. This number does not include 3 facilities that were not operational in 1993 (West Palm Beach, Martinez (CA), and Las Vegas), and three additional facilities with substantial

missing data (White City, Manila, and Honolulu). Of the 157 VAMCs, thirty (30) medical centers have participated in a total of fourteen (14) integrations between 1995-1996, initially leaving 127 for inclusion into a nonequivalent control group.

Two of the fourteen integrations were of three facilities. Six of the integrations were approved in fiscal year 1995 (October 1- September 30) and seven were formally approved in fiscal year 1996. One, the VA North Texas Health Care System, was informally started in FY1996, but formally approved in FY1997 (November, 1996). Because the VA does not provide local competing hospitals for comparison, a control group of nonmerged hospitals is used. The two groups are analyzed using control variables that encompass various structural and market characteristics so that differences in operational and quality results may be better interpreted.

As a baseline, operating data were obtained on the participating medical centers for FY 1993. This guarantees that data are collected 1.5 – 2.5 years prior to any of the integrations. Because data on operations are reported in aggregate after facilities integrate, preintegration scores of all 30 facilities are aggregated for each set (2 or 3) of integrating organizations to resemble their postintegration structure. Similar data at the close of FY1997 (October 30, 1997) were collected for all integrated and nonintegrated facilities. Assessing hospital behavior over two years in the pre- and 1 to 1.5 years in the postintegration periods permits this study to generate somewhat reliable baseline comparisons and to assess short-term effects (Kralewski et al, 1984; Alexander et al, 1996).

There may be a lag before integration can have an impact on hospital finances; however, it is unclear how long this period may be. If the postintegration time period is too short, Nauenberg et al (1999) hypothesize the results will be negative, as the initial

stages of network development normally require that members make an investment of resources that exceeds any initial benefits. Also, some integrations may be too organizationally immature to generate benefits in excess of their participation costs. However, it is important to not stretch the time frame of this study too long. The possibility exists that a rise in average performance would lead to statistically insignificant results since more than 3-years post integration might merely reflect long-term trends in performance independent of the status change (Parker & Hartley, 1991). Although the ideal situation would have been to have 3 years of postintegration data for all of the cases, this study of short-term postintegration operational effects may still be able to answer some important questions about performance despite the "truncated" postintegration period.

Data Sources

This evaluation project will use administrative data from the national VHA health care system. The initial collaborative research project performed by the team in Boston and Sepulveda, CA, as described in the Introduction, provided firsthand information on the process of integration and the various qualitative characteristics of the VHA medical centers that are undergoing integration. Firsthand project experience and site interview information will be used for contextual clarification to interpret the empirical findings. For the administrative data, all analysis files will be constructed from the following data sources.

VA Performance Measurement System (VA PMS)

The VA Performance Measurement System (VA PMS) was developed by the Office of Budget within the Office of Management in the Veterans Healthcare Administration (VHA). This office states that the "development of the VHA's departmental performance measurement system is an evolutionary, ongoing project that will involve continual refinements and enhancements to the list of performance indicators" (Performance Analysis Service, April 1997). The VA PMS relies upon several corporate databases for its information, including the Automated Management Information System, the Cost Distribution Report, the Extended Care file, the Patient Treatment File the Personnel and Accounting Integrated Data System, and the Outpatient Care File. It uses 100% abstraction of records from these administrative data sources within the VA.

The VAPMS relies upon several internal corporate databases for its information. These databases include the Automated Management Information System (AMIS); the Cost Distribution Report (CDR); the Extended Care File; the Patient Treatment File (PTF); the Personnel and Accounting Integrated Data System (PAID); and the OPC. Within the VAPMS, geographic detail and the type of facility/bed section division can categorize the data, however, the extracted data are kept intact from the original database and not adjusted for facility characteristics or patient differences. Data are available at the level of medical center, hospital, medical, surgical, or psychiatric categories. For this study, national VHA Medical Center (VAMC) totals are used for calculating the variables of total inpatient and ambulatory procedures and surgeries. The rest of the variables are all calculated at the inpatient Medicine, Surgery, and

Psychiatric Bed Section levels. These data are available for the whole population of VAMCs and includes the years FY1993 and FY1997.

Because each institution is responsible for reporting some of these data, there may be some reporting bias and validity issues around the definitions of costs, level of reporting within the organization (for example, VAMC vs. hospital-level), and general accuracy. However, this is the best source of administrative data within the VHA and continuous efforts are being made internally to assure the dataset is reliable and valid.

VHA Survey of Delivery Models for Primary Care

The VHA Survey of Delivery Models for Primary Care was administered nationwide in 1996 to create an inventory of various measures highlighting the shift from inpatient to outpatient delivery of healthcare within the VHA. It was performed by the Boston MDRC and Sepulveda HSR&D to conduct an analysis of the current status of firm system delivery models. The data from the survey are warehoused in Austin, TX and provide a few structural control variables for this study, such as service complexity and medical school affiliation. There was a 100% response rate so the survey is of the entire population rather than just a sample, eliminating the need to adjust for response bias.

1995 and 1997 VHA Patient Satisfaction Survey

The VHA Patient Satisfaction Survey is administered once a year by mail to random samples of VA outpatients from each VA medical center and satellite outpatient clinic nationwide. This survey and method is modeled after the survey format developed by the Picker/Commonwealth Program for Patient Centered Care. The

National Performance Data Feedback Center of the VHA began conducting an annual survey in 1994 to obtain patient judgments and ratings of their care. Separate surveys exist for inpatient and outpatient care, and are self-reported instruments consisting primarily of multiple-choice items and designed for mail administration (Young et al, 2000). The questions are designed to obtain patient satisfaction scores regarding their most recent inpatient stay or outpatient encounter.

In its present form, the VHA Patient Satisfaction Survey has been administered each September since 1995. The number of patients completing this survey is approximately 40,000 per year. For both the inpatient and outpatient surveys, the VHA randomly selects a sample from each facility (175 patients), using computerized patient records. An analysis is performed on the data approximately 3-5 months after being collected to assure its validity and reliability. Response rates to both the inpatient and outpatient surveys have been between 58% and 76% (Young et al, 2000). The data are stored on the national database in Austin, TX and provides the results as a mean percent for each year with national benchmarks.

The outpatient survey measures patient reports of problems in seven different categories of Customer Service Standards (CSS) defined by patients in focus groups held throughout the system. The survey collects information from each category and tabulates a patient "satisfaction" score (actually patient reported problems with care) within each of the domains. This study uses two of the domains collected; access/timeliness and coordination of care.

Interstudy's "Competitive Edge. Part III: Regional Market Analysis"

The Interstudy National HMO Census 6.2 requested data as of January 1, 1996.

It was mailed in to all 641 HMOs, with an 88.4% response rate. Data for the remaining 73 HMOs (11.4%) were obtained from state records or the Interstudy National HMO Census 6.1. Only 11 HMOs were not included in the census. All 1996 population estimates used in the reports were obtained from Healthdemographics (San Diego). Interstudy developed a basis for forecasting metropolitan enrollment growth using market classifications. Metropolitan and regional areas are classified according to their market demographics, health system characteristics, and HMO product diversification. Managed care participation/penetration was taken from this section. The Interstudy "Competitive Edge" is a publication based in St. Paul MN by A Division of Decision Resources, Inc. (December, 1996).

MDRC/Sepulveda "Analysis of Facility Integrations: Parts I & II."

The initial MDRC/Sepulveda project, started in 1996, used primary document collection, staff and management interviews, and survey results to produce two reports for the Under Secretary for Health, Department of Veterans Affairs. Produced in July 1998 and December 1999, respectively, by the Management Decision and Research Center in the Office of Research and Development, Boston, MA, the reports ("Analysis of Facility Integrations") give a thorough description of the process of the first 13 inpatient and one outpatient facility integrations. The reports also provide some data regarding the short-term outcome effects these integrations have on communication, operations, and culture, with the intention of creating lessons for facilities intending to integrate in the future.

Variable Specification

The measures of success for healthcare facilities have traditionally been volume statistics. The number of inpatient admissions and outpatient encounters, market share, occupancy rate, and even aggregate satisfaction levels has always indicated whether a facility was productive. It is now additionally important to measure a combination of inputs as well as outputs to provide meaningful information about the operational success of an organization. In addition to operational variables, structural characteristics and the general environment in which the VHA facilities exist will be used because of the hypothesized effect that these variables may have on an organizational strategy such as integration. Referencing the literature review and the first-hand project experience, this study uses the following variables to help determine any realized short-term integration effects.

Exhibit 4: Study Measures and Variable Names

Concept	*Measures*	*Variable Name*	*Stata 6.0 Label*
Main Independent Variable			
Facility Integration	Two or more VA healthcare facilities officially integrated 1995-1996 (1=integrated, 2=not integrated)	Integration	Integrtd
Dependent Variables			
Operating Effectiveness			
	Administrative+support+clinical costs/bed day of care, % change FY1993-1997	Change in Cost per Bed Day of Care	CstBDCCh
	Clinical FTE/Administrative FTE, % change FY1993-1997	Change in Clinical: Administrative Staff Ratio	ClnAdmCh
	Number of direct care employee separations/number of paid direct care employments, % change FY1993-1997	Change in Direct Staff Turnover	DirTOCh
Perceived Quality			
	Patients reported problems with access to care, % change FY1995-1997	Change in problems with Timely Access	TmAccPrb

Concept	Measures	Variable Name	Stata 6.0 Label
	Patients reporting problems with coordination of care, % change FY1995-1997	Change in problems with Care Coordination	CoordPrb
Control Variables			
Market Characterisitics			
	1=East, 2=Central, 3=South, 4=West	National Quadrant	QuadCat
	1=rural, 2=city, 3=MSA	Urban-Rural Location	UbRICat
	Estimated HMO penetration of metropolitan statistical area in 1996	HMO Penetration	HMOper96
Structural Characteristics			
	Number of beds facility-wide. % change 1993-1997	Change in Beds	BedsChng
	8 point-scale rating as measured by the VHA-Boston Developmental Center, condensed into 4 categories. 1=small, general, 2=mid-size, secondary, 3=metro, complex, 4=psych	Service Size	SrvMxCat
	Average stay of inpatients, % change FY1993-1997	Change in ALOS	ALOSChng
	Total outpatient visits to facility, % change FY 1993-1997	Change in OP Visits	OPChange
	1=Medical School affiliation, 0=no affiliation	Teaching Affiliation	AffilCat
	Total full and part-time registered nurse FTE/ total admin, clinical, and support FTE, % change FY93-97	Change in RN FTE / Total	RNpercCh

Main Independent / Intervention Variable (Integration)

This evaluation study is based on the intervention variable of integration. In the VA, facility integration means bringing two or three previously independent facilities together as a combined medical center under a single management. There are two familiar paths that have led VA medical centers to obtaining formal facility integration status. The first course toward integration for the VA has been the existence of a

previous working relationship between the facilities, which results in collaboration between facility directors. The subsequent integration may come as no surprise to these facilities when they move to formally merge their administrative assets and share services. The second, sometimes more disruptive, motivation for integration has been due to either geographic proximity or imbalance in size between two or three facilities that has led the regional network to advocate for the combination of resources to decrease any duplication of services in the area. Although the variation in integration processes provides interesting case study analyses, I assumed the mandate to integrate resulted in a sufficiently uniformed response across integrating facilities to combine them to form the experimental group. The variable, integration, is therefore dichotomous for this dissertation.

Dependent Variables-Operational Effectiveness and Perceived Customer Quality

Even if the same concept of effectiveness is being applied across all facilities, the same organization may perform extremely well in one domain of activities but relatively poorly in another. Therefore, this study must include multiple measures to describe multiple domains of activity. Specifically, the set of dependent variables (DVs) consists of percentage changes in operating measurements and staffing. Analysis of total expenses indicates whether hospitals undergoing substantial administrative and service restructuring pressure actually curb expense growth per output. Looking at personnel suggests how effects on expense growth or reduction, and organizational upheaval due to structural changes, may translate into changes in staffing. The following is an explanation of the dependent variables.

1. Total input costs per Bed Day of Care:

Input costs are comprised of administrative, clinical and support costs. **Administrative costs** are the total administrative and clerical costs incurred in the management and operation of the respective activities during the reporting period. Personal services costs (expenditures paid to employees as wages plus cost of fringe benefits) are included. **Clinical costs** are the costs incurred in the delivery of direct medical care during the reporting period. **Support costs** are the total cost of building maintenance and engineering and miscellaneous services and benefits costs utilized for the respective activities for the reporting period. For this study, the medical center is used as the unit of analysis and includes all acute and intermediate medicine, psychiatry, and surgery costs.

Bed Days of Care are equivalent to patient days. Patient days are defined as the number of days of care provided patients during the month and then aggregated for the year. The number of days of care for a given day in the medical center will be the number of bed occupants remaining as of midnight plus the number of patients who were admitted and then discharged or transferred that same day.

2. Percent change in the number of Clinical FTE / Administrative FTE:

Clinical FTE is the total number of direct medical care FTE utilized for the respective activities during the fiscal year. **Administrative FTE** is the total number of administrative and clerical FTE utilized in the management and operation during the fiscal year.

3. Percent change in direct care staff turnover rate:

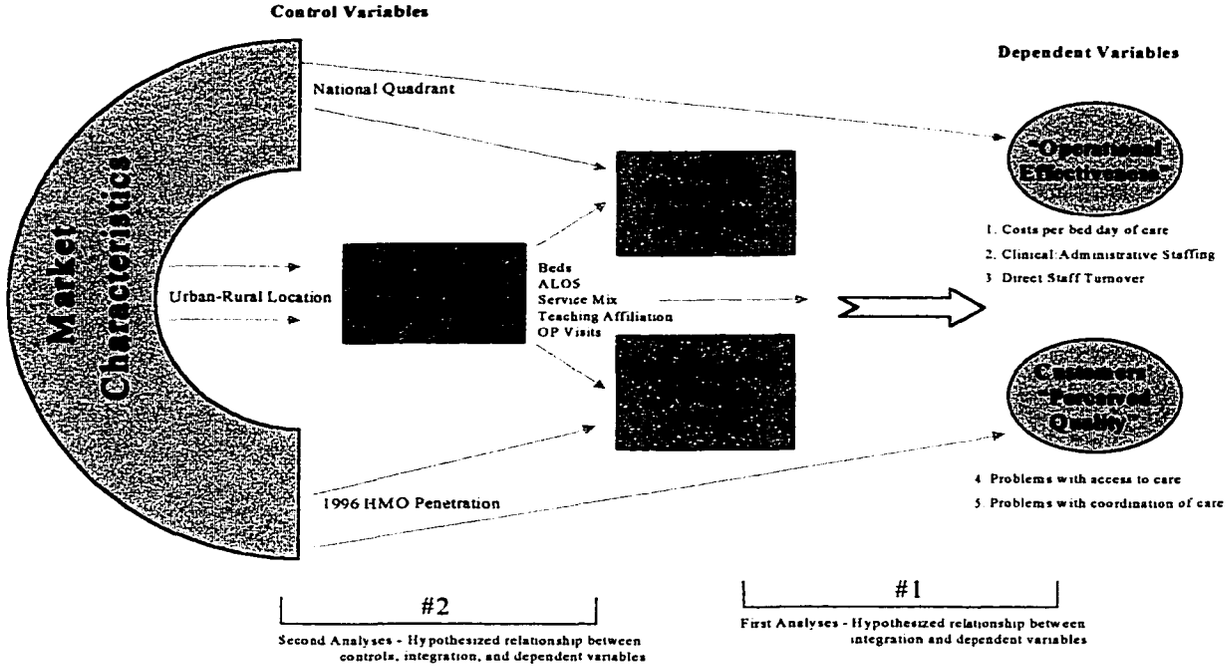
Turnover rate is calculated as the number of employee separations divided by the number of paid employments. Employee separations are the number of full-time employees that have been terminated or transferred to another VHA facility during the reporting period. Paid Employments are the total number of full-time, part-time, and intermittent employees on the rolls at the end of each reporting period (usually one month), then summed for the year.

4. Percentage of primary care patients reporting problems –1995 and 1997:

The actual value is derived from those patients reporting problems with timely access to or coordination with care on the 1995 and 1997 National VHA Patient Satisfaction Survey. There were seven categories used in this survey to measure patients' perceptions and satisfaction with their care at the VHA. A decrease in score is an improvement in service/quality, as satisfaction on these surveys is a reduction in reported problems with care. The two categories used for this study are the coordination of patient care and the timeliness and access to care. The five other categories (continuity, courtesy, education, emotional support, preferences) seemed less applicable to the structure in which care was delivered and instead heavily dependent on a specific encounter and/or individual provider (and potentially more ambiguous for patients to understand and answer). Continuity (of providers) could possibly have been used to measure the effect of integration on staffing and service. However, coordination and continuity seemed similar enough, but coordination of services was of more interest due to the structural impact that integration is

hypothesized to have on the provision of care because of merger and consolidation of programs. Thus, coordination of care was chosen for the analysis.

Exhibit 5: Conceptual Model – Operationalized with Dependent and Independent Variables



Independent Control Variables (Structural and Market Characteristics)

The control variable strategy is based on identifying variables that might affect the dependent variables or might have caused inherent differences and a selection bias for those VHA medical centers undergoing integration. As indicated in the health care merger literature (Treat, 1976; Molinari et al, 1995), differences between medical centers in this study may be controlled using various structural and market characteristics as variables. The Center for Healthcare Industry Performance Standards

(CHIPS, 1995) makes an argument for the use of bed size, revenue size, teaching status, geographic region and urban/rural designator specifically as good cross-sectional controls for analyses. Profiles of these variables will be studied along with their correlation. There is a possibility that the size, service mix, location, and teaching affiliation variables are correlated and do not all need to be included. ALOS and service mix may also be highly correlated due to long lengths of stay for psychiatry patients and intensive care services.

The control variables are: hospital size, number of outpatient/ambulatory visits, ALOS, service mix, RN FTE as % of total, national quadrant (East, Central, South or West), urban/rural designator, teaching affiliation, and managed care penetration. Managed care prevalence seems important because the larger the proportion of an area's population that participates in managed care contracts and utilizes physicians influenced by managed care practice standards, the greater the spillover effect on the way care may be delivered to veterans and veterans' expectations regarding their health care services.

Hospital Size: This is measured by the average number of acute care beds set up and staffed for use in FY1993 and FY1997, and the rate of change over the four years.

Number of Outpatient/Ambulatory Visits: The number of ambulatory procedures and surgeries is determined for FY1993 and FY1997, and the rate of change over the four years. The amount of outpatient activity can be used as a control to account for a facility's delivery patterns that affect scale of operations and productivity. It reflects the growth in the amount of outpatient service revenues relative to inpatient service

revenues. A greater relative growth in outpatient services should be associated with lower revenue and expense growth, and lower inpatient staffing requirements.

Average Length of Stay (ALOS): ALOS of discharged patients is the average stay of inpatients in FY1993 and FY1997, and the rate of change over the four years.

RN FTE as a Percent of Total: Registered Nurse FTE is the total number of full and part-time registered nurse FTE utilized within the hospital during the reporting period. Total FTE include all clinical, administrative, and support FTE utilized in the management and operations of the hospital. The differences between the RN nurse ratio from FY1993-FY1997 may lead to the different cost structure experienced by facilities rather than the effects of integration. Hospital outcomes have shown that morbidity and mortality are related to organizational level factors such as nurse staffing intensity, and ratio of RNs to other nurses (Mitchell et al, 1996). In support of monitoring RN levels as a percent of total, these authors found that with experienced critical care practitioners, unit-level structure and process factors were better predictors of organizational outcomes than of clinical outcomes.

Service Mix: The mix of services delivered at the VAMCs was given a rating on a 8-point scale administered by the VHA-Boston Development Center. Because of the similarity between several of the categories, the limited number of observations within each category, and the desire to maintain as much power for analysis in this study, the scale condensed to include 4 categories: 1=general, primary (n=49), 2=secondary, mid-

sized (n=60), 3=tertiary, complex (n=26), and 4=psychiatric (n=22). This includes all of the 157 VAMCs in this study. Initially, psychiatric facilities were going to be excluded due to the different operating characteristics such as length of stay and possibly clinical staffing ratios. However, postintegration statistics do not separate psychiatric contributions to the numbers within the integrated systems. Therefore, psychiatric facilities were included in the analysis.

National Quadrant: This variable will be classified as 1=East, 2=Central, 3=South, or 4=West. It is important to control for regional influences on practice style of the physicians and other providers, regional variation in the number of admissions per 100,000 population, labor productivity trends found in various parts of the U.S., and other such factors that may make healthcare delivery inherently different in the U.S. by location. Ideally, it would be best to control by the 22 regional VISNs, but due to a small number of observations, there are not enough degrees of freedom to examine regions.

Urban vs. Rural Location: This variable is measured by classifying a facility as either being located in a rural area or small city (n=48), mid-size city (n=43), or metropolitan statistical area (n=66). Urban or rural location might influence all of the operational efficiency variables because of issues of workforce availability, population size and demand for beds, and administrative expenses being spread over the scale of operations.

Teaching Affiliation: This control variable will be measured by using the Boston Development Center's classification of mission and complexity index for each facility.

Options for teaching status affiliations are either 1) little or no teaching responsibilities: n=26, or 2) medium or full teaching responsibilities: n=131. The greater the teaching responsibilities, the more one would expect larger administrative expenses, more staff per bed, and a greater number of total acute care beds.

Managed Care Penetration: The facility's region will be assigned a percentage of managed care (HMO) penetration for 1996 as found in InterStudy's "Competitive Edge". Most of the contracted VA physicians have practices outside the VA as well. If a larger proportion of an area's population belongs to HMOs and physicians are influenced by managed care practice standards of the area, it would be expected to have a spillover effect to the way care is delivered to veterans and what veterans may expect regarding their health care services.

Methods

Methods – Descriptive and Bivariate

The independent variable effects, those caused by facility integration, are determined by comparisons of "before" and "after" measures of "operational effectiveness" (3 dependent variables) and for measures of "perceived customer quality" (2 dependent variables). The initial analysis of the data requires variable specification, data editing and recoding, and descriptive distributions of the dependent, independent and control variables. All statistical analyses were performed using STATA 6.0 on a local PC.

A series of cross-tabs was performed to observe the distributions of all variables. This was followed by a descriptive analysis that provides a general comparison of each of the dependent variables and the independent and control variables between the experimental and control groups. It is important to perform a covariance analysis to test the effects of the experimental (integration) variable against the dependent variables since the procedure of matching, which would greatly reduce unwanted regression effects, cannot be performed for this data set due to the limited number of integrated sites and their diverse locations across the nation.

This study examines hospital and hospital system changes in performance using mean comparison tests on the equality of means. This statistic tests whether the mean of the sample is equal to a known constant under the assumption of unknown variance. Because this study's hypotheses are directional, a one-tailed t-test is appropriate and allows for a greater p-value to be considered for significance. However, the test is inappropriate when a distribution may not be assumed normal. Because of the potential for non-normality of the distributions of the change measures in the sample of VAMCs, the nonparametric Wilcoxon matched pairs signed rank and Mann-Whitney rank sum test was initially used to test for statistical significance. The sign rank test was performed on the matched cross sectional pairs (i.e., integrated facilities in 1993 and 1997) and a rank sum test was performed on the unmatched pairs (integrated vs. nonintegrated). The Mann-Whitney statistic tests the hypothesis that two independent samples (unmatched data) are from populations with the same distribution. Although less powerful than a t-test, it does gauge whether the median remains unchanged rather than the mean (the null hypothesis) to make an assumption regarding distribution.

Methods - Multivariate Analysis and Regression

Each research question will be tested with a unique multivariate or regression analysis of a dependent variable, the independent variable integration, and a combination of structural and market control variables. The dependent variables for the regression models are the same as for the univariate and bivariate analyses. The primary independent variable of interest in each regression model is the binary variable that indicates an integrated hospital. Previous research has shown that facility size, hospital output, complexity of services provided, and managed care penetration are related to hospital financial performance and staffing variables. Thus, these factors are controlled in the analysis.

Bringing together multiple facilities into one reporting entity will greatly influence the magnitude of some of the cross sectional variables that are not change rates (i.e., number of beds, number of outpatient visits). Although the time of formal integration does span over a year (FY1995-FY1996), important differences in magnitudes of the change values are not anticipated among integrated medical facilities because the integration was staggered. The dependent variables are designed to measure the significance and direction of the performance changes between the two comparative groups pre- and postintegration.

As mentioned above, this study uses some cross sectional data for the control variables and calculates the percent change between observations as the basis for dependent variable comparisons. Particular control variables may be eliminated to save degrees of freedom for multivariate analyses if, after the bivariate analyses and correlation statistics are performed, some are found to be highly associated and are in

essence testing the same concept. The other possibility may be that some variables might be mediating, or intervening variables, to integration. In this case, the contribution of each variable will be evaluated and interpreted to determine whether it is actually a control or intervening variable and what its value is to the model. There is also a good possibility of lurking, or omitted, variables in this study since the unit of analysis is so broad and complex. These variables could change the conclusions of a regression study, so both the dependent variables and the residuals will be plotted to allow a better understanding of the patterns of observations.

If the performance changes are not distributed normally, each dependent variable for the regression analyses will be measured as the natural logarithm of growth (post- / pre-) values. The growth measures and the logarithmic transformation improve the normality of the distributions. Ordinary least squares (OLS) regression modeling will be used to estimate the effect of integration on the five chosen operational effectiveness and perceived quality dependent variables since they are all continuous variables. In a multiple linear regression setting, the dependent variable Y responds more clearly to the intervention variable X when other C variables are controlled. The statistical model for multiple linear regression is:

$$Y = \alpha + \beta_1 X + \beta_2 C_2 + \beta_3 C_3 + \ldots + \beta_p C_p + \varepsilon$$

where Y = dependent cost and quality variables
α = "true" intercept
β_p = estimators of the parameters
X = explanatory variable (integration)
C_p = structural characteristic and market control variables; p = 2, 3, ..., n
ε = residual, error; difference between the observed and predicted response.

Regression Formulas

The research questions are reiterated below, with the specific dependent variables identified in the algebraic model to measure the concept. Control variables will be specified once the bivariate analyses determine the appropriate ones for inclusion.

***Q1**: Does facility integration help to reduce the expenses per bed day of inpatient care more for integrated than for nonintegrated medical centers?*
Hypothesis 1: Integrated facilities should experience slower growth in costs per bed day of care than nonintegrated facilities.

% Δ in total input Costs per BDoC = f (integration, structural & market control variables)

***Q2**: Does facility integration lead to the redirection of resources from administrative budgets to direct patient care?*
Hypothesis 2: Integrated facilities should spend a relatively greater proportion of money on direct patient care compared to nonintegrated facilities and should increase this proportion over time due to administrative reductions.

% Δ in Clinical FTE / Admin FTE = f (integration, structural & market control variables)

***Q3**: Does facility integration create a greater level of direct care staff turnover than nonintegrated facilities?*
Hypothesis 3: Integrated facilities will experience greater direct staff turnover than nonintegrated facilities.

% Δ in direct staff turnover rate = f (integration, structural & market control variables)

***Q4**: Do facility integrations improve the veterans' perception of access to care and coordination of services?*
Hypothesis 4: Integrated facilities will experience improvement in patients' perceived quality regarding access to care, but less improvement than nonintegrated facilities.
Hypothesis 5: Integrated facilities will experience more patient reported problems with coordination of care than nonintegrated facilities.

% Δ of primary care patient reporting problems with access to and coordination of care = f (integration, structural & market control variables)

Brief Review of the Use of Dummy Variables

Because indicator or categorical data are used in this study's analyses, a brief explanation regarding the variables is offered here, heavily referencing Polissar & Diehr, 1992. Service mix, urban-rural designation, and national quadrant are all given the term "constructs" for this study. The term construct denotes the categorical variable as opposed to the individual dummies. There is no possibility the constructs could be constructed to present ordinal data, so it was important to use dummy variables while not making too many categories within each construct to save analysis power. The distinction between constructs and dummy variables is important because the hypotheses involve an entire construct, but many of the results are reported for individual dummies. This will be kept in mind when interpreting the results.

Chapter 5: Results

The first two sections below provide a description of the independent and the five dependent variables in this study. The third section presents the determinants of operational effectiveness and perceived customer quality in an environment of facility integration. This is accomplished by use of descriptive statistics, distribution free analyses, bivariate, correlation, and multivariate tests pertaining to each dependent variable. Further discussion of the results is presented in Chapter 7.

Description of the Independent Variables

Facility Integration

This evaluation study is based on the intervention variable of facility integration. In the VHA, medical center integrations in fiscal years 1995 and 1996 meant bringing two or three previously independent facilities together as a combined medical center under a single executive and, sometimes, unified operational management. This study includes the 157 VA inpatient medical centers in full operation as of FY1993. Of these, 30 facilities formally integrated between FY1995-FY1996 to form 14 healthcare systems (19.1%), leaving the remaining population in a comparison group (80.9%).

The original MDRC/Sepulveda project attempted to quantify and describe levels of integration and their different influence on outcome variables. This dissertation focuses on the short-term effects expected from the general process of integration. Thus, it does not distinguish different types or degrees on integration. Because integration is occurring within a single payer/single governing body, the mandate to

integrated is assumed to result in similarities among all initiated integrations. This is not to say the way in which each integration undergoes change isn't intriguing or worthy of study, there are most definitely lessons to be learned! It is simply not the focus of this research. Therefore, integration was given a binary score of 1=integrated, 0=nonintegrated.

Structural Characteristics

The structural characteristics of a facility may possibly have a distinguishing effect on those systems undergoing integration. If this is true, then using them to control for hypothesized differences is necessary. Table 1 shows the means and standard deviations for the six structural control variables.

On average, all inpatient VAMCs dramatically reduced the number of inpatient beds by 45.4% between FY1993-1997. Integrated systems significantly reduced the number of beds significantly more than nonintegrated facilities (-46.3% vs. –37.2%, <.05). Average length of stay was reduced for all facilities by 15.8%, with integrated and nonintegrated facilities experiencing similar declines ranging on average from 12.3 to 16.2%. The VA's emphasis on shifting care from an inpatient setting to outpatient visits resulted in all facilities greatly increasing their number of outpatient visits by 34.7%. The change in outpatient visits over 4 years was not significantly different for the two groups. To ensure these variables were distributed equally between the two populations for further comparison, the observations were analyzed using the nonparametric Wilcoxon (Mann-Whitney) rank sum. This test confirmed their equal distribution (See Appendix 1).

Table 1: Descriptive Statistics for Independent Variables

	Total		Integrated		Nonintegrated	
	% of total or mean	S.D.	% of total or mean	S.D.	% of total or mean	S.D.
Integration						
1 = Yes	19.1%					
0 = No	80.9%					
Structural Characteristics						
Beds						
Mean Change	-45.4%	15.9%	-37.2%	16.9%	-46.3%	15.6%
Average Length of Stay						
Mean Change	-15.8%	26.9%	-12.3%	40.0%	-16.2%	25.2%
Outpatient Visits						
Mean Change	34.7%	19.4%	32.5%	12.3%	34.9%	20.1%
RNs as a percent of total						
Mean Change	3.7%	12.0%	9.0%	21.5%	3.1%	10.4%
Service Size (Complexity)						
1=Small, general	28.4%		7.1%		30.7%	
2=Mid-Size, secondary	41.8%		64.3%		39.4%	
3=Large, complex	18.4%		28.6%		17.3%	
4=Psych	11.3%		0.0%		12.6%	
Teaching Affiliation						
1 = Yes	83.4%		92.9%		84.3%	
0 = No	16.6%		7.1%		15.7%	
Market Characteristics						
Urban-Rural Location						
1=Rural	30.5%		7.1%		29.9%	
2=City	27.4%		21.4%		27.6%	
3=Metro	42.0%		71.4%		42.5%	
National Quadrant						
1=East	28.0%		36.7%		26.0%	
2=Central	25.5%		20.0%		26.8%	
3=South	28.7%		30.0%		28.3%	
4=West	17.8%		13.3%		18.9%	
HMO Penetration	17.4%	13.1%	21.6%	11.3%	16.9%	13.3%

As a measure of preexisting levels of clinical staff as well as changes over time, RN FTEs as a percent of total FTEs was included as a structural variable thereby controlling for an organization's clinical intensity. While all VAMCs slightly increased the proportion of RNs to total FTEs over time, integrated systems experienced a 9% average increase while nonintegrating facilities increased only 3.1% (<.05). The greater increase for integrated facilities was found not to be driven so much by an

increase in actual hired nurses, but a less substantial drop in RN FTEs for the integrated systems than nonintegrated (-17.1% vs. -22.8%, respectively – see Appendix 2 under staffing subvariables). For both integrated and nonintegrated facilities, the change in ratios over time show that the numbers for non-RN FTEs declined more than the numbers for RN FTEs.

Similar to the private sector, most VA inpatient facilities are reducing beds while increasing outpatient services which explains the mean change over time of the continuous variables. However, integrated facilities were possibly not decreasing beds as quickly as the nonintegrating facilities because of merger and different management priorities. It seems likely that beds will decrease more rapidly once more long-term decisions are made regarding clinical consolidation. Other patient management gauges such as average length of stay did not seem to differ between the comparative groups. While clinical staffing proportions were lower for facilities about to be integrated, these facilities lost fewer nurses overall and thereby increased RNs as a percent of total FTEs so that it was no longer significantly different from the nonmerged facilities.

Facility size and service type were used to better understand the defining features of the VAMCs as well as control for structural influences. The variables remains virtually unchanged over the study period. Values for service size and type (the complexity score) were greatly influenced by combining facilities within a single integrated system. When examined in total, the greatest number of VAMCs are mid-size, secondary service facilities (41.8%). Smaller, general service facilities (28.4%) are the second biggest category, followed by large, complex facilities (18.4%). Psychiatric facilities comprise 11.3% of the total VAMCs. However, integration brings together facilities of differing services and, therefore, creates difficulties in categorizing

service mix. Because most integrations include a large, full-service facility with smaller general facilities and/or a psychiatric facility, they were classified as large and complex given they provided a more full range of services within one "entity". After much consideration, stand-alone psychiatric facilities were included in the analyses because six of the integrated systems include a psychiatric facility. Because of this classification, a greater proportion of the integrated systems are classified as large and complex compared to the nonintegrated facilities (28.6% vs. 17.3%, <.05). There was only one smaller, more general service integrated system (Black Hills) as compared to 30.7% being classified as such for the nonintegrated facilities. For reasons explained above, none of the integrations was categorized exclusively as psychiatric (0.0% vs. 12.6%).

The vast majority of VAMCs are academically affiliated with a medical school and its teaching faculty and residents (85.1%). This affiliation status is similar for both integrated and nonintegrated facilities.

Market Characteristics

The dispersion of VAMCs in the nation is fairly equivalent with 27% in the East, 26.2% in the Central states, 28.4% in the South, and 18.4% in the Western states. Because integrations are only regional (sometimes even local in the case of the Chicago Healthcare System's institutions being only 6 miles apart) and remain within a single VISN, there was no shifting of facilities among quadrants. However, despite the proportions indicating a few more integrations occurring in the East and South than the Central and Western states, there was no significant difference between the total distribution of integrated and nonintegrated facilities in the four quadrants.

Classifying the urban-rural location of facilities presented a challenge similar to service mix when moving stand-alone VAMCs into integrated systems. In general, VAMCs are located more often in metro (MSA) settings (42.0%), with a large number of facilities also located in mid-size cities (27.4%). Small towns (15.8%) and more rural locations (14.7%) were combined to increase the power of analysis to create the overall category of rural (30.5%). After facilities integrated, a service location had to be designated based on the overall system location. This increased the numbers in MSA areas (71.4% vs. 42.5% for nonintegrated) as most systems did have a MSA facility yet were now able to cover a larger geographic area with their more rural facilities as well. A small proportion of integrated systems were exclusively "rural" (Black Hills Healthcare System has such a designation, creating the comparative proportions of 7.1% for integrating vs. 29.9% for nonintegrating facilities).

Finally, HMO penetration was only recorded for 1996, and, therefore is considered a postintegration control variable for environmental influences. Most VA physicians split their time between private practice and faculty/VA clinical responsibilities. The possibility of patients being managed differently due to the influence of established managed care controls in the private sector on doctor's practice styles could have a substantial influence on clinical care where there is a high proportion of the population enrolled in managed care. On average, the rate of HMO penetration in VA facilities' local environments was 17.4%, with a standard deviation of 13.1%. There was no significant difference between the two groups for HMO penetration rate in their regions (21.6% for integrated vs. 16.9% for nonintegrated).

Description and Bivariate Findings of the Dependent Variables

Table 2 provides the means and standard deviations for the five dependent variables, before and after integration, as well as the mean rate of change over the four-year study period.

Table 2: Descriptive Statistics for Dependent Variables

	Mean	S.D.
Operational Effectiveness		
Cost per Bed Day of Care		
1993	515.3	165.3
1997	918.2	350.2
Mean Change	40.6%	15.1%
Clinical : Administrative Staffing Ratio		
1993	5.7	1.3
1997	5.1	1.6
Mean Change	-10.3%	21.9%
Direct Staff Turnover		
1993	10.8	4.1
1997	8.5	2.8
Mean Change	-14.7%	32.4%
Perceived Customer Quality – Reported Problems with:		
Timely Access to Care		
1995	0.252	.06
1997	0.145	.03
Mean Change	-41.0%	13.7%
Coordination of Care		
1995	0.360	.06
1997	0.353	.04
Mean Change	-1.5%	16.1%

Two nonparametric analyses were performed to confirm the shifts in values as well as discover whether the variables for each of the comparison groups, integrated and nonintegrated, were distributed equally for further comparison and analysis. The Wilcoxon sign rank test did confirm the positive and negative shifts in values by using median observations. The Wilcoxon (Mann-Whitney) rank sum is a distribution free

statistic and tests the hypothesis that the 2 independent samples (unmatched data) are from populations with the same normal distribution. The rank sum test showed there were no significant differences in shifts between the groups and all the dependent variable values were distributed equally between the two groups (see Appendix 3).

Table 3 shows each of the means for the five dependent variables by integration status and performs a t-test to determine if any differences between the experimental and comparative group are significant.

Table 3: Integration Effect on Dependent Variables

		Integrated		Nonintegrated		Analysis	
		Mean	S.D.	Mean	S.D.	t (df=139)	p
DV #1	Cost per Bed Day of Care						
	1993	442.4	101.3	523.4	169.3	1.75	<.05
	1997	772.6	248.3	934.2	356.8	1.65	<.05
	Mean Change	39.6%	13.2%	40.7%	15.3%		n.s.
DV #2	Clinical:Admin Staff Ratio						
	1993	6.1	1.3	5.7	1.3	-1.31	<.15
	1997	5.6	1.1	5.0	1.6	-1.36	<.10
	Mean Change	-4.7%	27.1%	-10.9%	21.3%		n.s.
DV #3	Direct Staff Turnover						
	1993	11.9	1.7	10.7	4.3	-0.99	<.20
	1997	8.6	2.3	8.5	2.8		n.s.
	Mean Change	-26.1%	21.8%	-13.5%	33.2%	1.39	<0.10
DV #4	Timely Access Problems						
	1995	0.255	.05	0.252	.06		n.s.
	1997	0.152	.03	0.145	.03		n.s.
	Mean Change	-40.0%	77.0%	-41.1%	14.2%		n.s.
DV #5	Care Coordination Problems						
	1995	0.369	.06	0.359	.06		n.s.
	1997	0.365	.06	0.351	.04	-1.05	<.15
	Mean Change	-0.1%	12.9%	-1.7%	16.5%		n.s.

Operational Effectiveness

There are three measures of operational effectiveness. They attempt to capture not only the expenses associated with providing care, but the level of clinical staffing

and possibly clinical disruption related to facility integration. These three dependent variables are described below.

Dependent Variable #1: Cost per Bed Day of Care

Cost per bed day of care increased dramatically between 1993 and 1997 for all facilities (40.6%). The overall mean rate of increase did not differ significantly between the integrated and nonintegrated groups (39.6% vs. 40.7% respectively) (Table 2). However, facilities that were to be integrated had significantly lower costs per bed day of care ($442) than their comparators ($523) in 1993 and after integration in 1997 ($772 vs. $934, <.05) (Table 3).

- *Hypothesis #1: No support – There was no difference in growth of costs per bed day of care between integrated and nonintegrated facilities.*

Counter to the expectation about what was driving costs, an analysis of the variables that comprised this ratio discovered that both clinical and support costs decreased over time on average (-11.2% and –4.0%, respectively), while it was administrative costs that increased dramatically (24.5%). The denominator, mean change in bed days of care, decreased so substantially (-44.8%) that there were fewer units over which to spread the costs, also helping to increase the overall costs per bed day of care for both integrated and nonintegrated facilities (see Appendix 2).

One plausible explanation for why integration is not having a significant effect on cost per bed day of care is due to the small number of integrated systems in the experimental group compared to the comparison group VAMCs (14 vs. 127). This could cause the standard error to be too great, therefore no systematic difference would be found. A sensitivity analysis was performed to hypothetically increase the

number of integrations, consequently reducing the standard error of the difference, helping to determine whether more integrations would provide significant results even if the added integrations were not significant. For costs per bed day of care, the sensitivity analysis used a manipulated number of integrations (n=25, 50, 75, 127) and recalculated the standard error of the differences. Despite these calculations, no increased number of integrations provided a significant effect of integration on cost per bed day of care.

Dependent Variable #2: Clinical:Administrative Staff Ratio

Tables 2 and 3 show that the clinical staffing ratio from 1993-1997 decreased 10.3% for all facilities, and the decrease over time did not differ significantly between integrated and nonintegrated groups (–4.7% vs. –10.9%). However, facilities that were to be integrated had a slightly higher clinical staff to administrative staff ratio (6.1) than those not integrating (5.7) in 1993 and after integration in 1997 (5.6 vs. 5.0, <.10).

- *Hypothesis #2: Partial support – Clinical to administrative staff ratios declined over time similarly between integrated and nonintegrated facilities; however, the proportion of clinical resources allocated in integrated systems was as hypothesized – slightly higher.*

Contrary to the expectation that integration would reduce duplicative administrative staff and thereby increase the clinical staff proportion, the component variables show that it was clinical staff that decreased more slowly in the integrating facilities rather than the higher rates of clinical to administrative staff being the result of a significant drop in administrative staff. In fact, administrative staff reduction occurred in both groups similarly, but clinical staff wasn't decreasing as rapidly for the integrated facilities. The argument could be made that integration has *slowed* the reduction of

clinical staff and therefore kept the ratio significantly different from the nonintegrating VAMCs.

Finally, integration was not significant as a predictor of change in clinical:administrative staffing ratios. A sensitivity analysis was perform to hypothetically increase the number of integrations, reducing the standard error and determining whether the lack of results is simply due to a small "n". Manipulating the number of integrations (20, 25, 30, 35, 50, 75) found that approximately thirty (30) integrations in the analysis, with no significant change in the mean value of the dependent variable, would provide enough power to achieve a significant effect due to integration (z=2.213, 95% confidence interval).

Dependent Variable #3: Direct Staff Turnover

Tables 2 and 3 show that while changes in direct staff turnover between 1993 and 1997 decreased on average for all facilities (-14.7%), integrated systems experienced a slightly significantly greater decline in turnover (-26.1%) than nonintegrated facilities (-13.5%, < 0.10). Facilities that were destined to be integrated in 1993 had a slightly higher turnover ratio than those that were to remain nonintegrated (11.9 vs. 10.7), but the turnover ratio was almost identical in 1997 (8.6 vs. 8.5). This would suggest that integrations actually stemmed the loss of staff, whereas it was hypothesized to do just the opposite, namely an increase in turnover due to staff upset and institutional disruption.

- *Hypothesis #3: Slight support – Integrated systems experienced slightly more direct staff turnover than nonintegrated facilities over the four years, but because integrated started with higher turnover rates, the change in rates actually made the turnover rates between the two groups closer by the end of the study period.*

A sensitivity analysis was performed, using different numbers of integrated systems to decrease the standard error, and it was found that approximately fifteen (15) integrations was sufficient to obtain a significant test statistic. This is somewhat confirmed by the borderline significance of the bivariate analysis (<.20).

Perceived Customer Quality

Perceived quality is measured as patient reported problems with care. Therefore, a decrease in score is desired, indicating fewer problems and supposedly, greater satisfaction with care. The change in perceived quality was measured as patient reported problems with timely access to care and the coordination of care between 1995 and 1997. These scores refer to outpatient care.

Dependent Variable # 4: Timely Access to Care

Tables 2 and 3 highlight the dramatic 41.0% decline in patient reported problems with timely access to care for all facilities. This drop is reflected similarly in integrated systems (-40.0%) and nonintegrated facilities (-41.1%). Testing the difference of the means of this variable pre-and postintegration showed no difference in 1995 and 1997 scores between groups.

- *Hypothesis #4: No support – Integrated systems did not experience more patient-reported problems with timely access to care than nonintegrated facilities.*

As with other bivariate dependent variable analyses, integration was not a significant related to a change in patient reported problems with timely access. A sensitivity analysis was performed, increasing the number of integrated systems to determine whether significance would be found should the variation in standard error decrease. Calculations were performed to include a wide number of integrations (20,

25, 50, 75) and it was found that increasing the number to approximately 25 integrations from the current 14 would cause the independent variable to have a significant effect on timely access to care ($z=2.03$, $p<0.05$).

Dependent Variable #5: Coordination of Care

Patient reported problems with coordination of care from 1995-1997 did not change much for all VAMCs (-1.5%), nor differ substantially between the integrated and nonintegrated group (-0.1% vs. –1.7%). Comparing and testing the difference of the means of this variable pre-and post-integration showed no difference in baseline scores in 1995, but slightly less decline in patient reported problems for integrated facilities in 1997 ($p<0.15$). The Wilcoxon sign rank test confirmed that almost as many facilities experienced an increase in median scores against those that were decreasing (62 vs. 78 respectively, Appendix 1).

- *Hypothesis #5: Not supported – Integrated systems did not experience more patient-reported problems with coordination of care than nonintegrated facilities.*

Holding the mean constant, a sensitivity analysis showed that after manipulating the number of integrations (n=25, 30, 35, 50, 60, 75), approximately 30 integrations would have an overall significant effect on patient reported problems with coordination of care ($z=2.515$, 95% confidence interval).

Determinants of Operational Effectiveness & Perceived Quality

Correlation of Independent Variables

Table 4 shows correlations between multiple independent variables and constructs. This test determines whether multicollinearity exists between the

independent variables. The results of the correlation analysis show some relationships between independent variables, but nothing so significant to suggest a problem with significant multicollinearity. Because the independent variables are at the organizational level and are themselves correlated, it is more difficult to separate the R^2 into the predictive contributions of each independent variables in the OLS regression formulas.

The significant relationship integration has to the other independent variables and constructs will be discussed in the following sections, as well as their correlations with each other, to provide a richer discussion of the independent variables.

Change in Beds

This variable was positively associated with integration, a change in average length of stay, and HMO penetration. A change in beds was negatively correlated with certain categories of service mix, urban-rural location, and academic affiliation.

More precisely, as mean change rate of beds decreased, the facilities were more likely to be nonintegrated and have a reduction in the change in average length of stay. In addition, a greater decrease in the mean change of bed numbers was slightly associated with more general service facilities, while fewer reductions in beds was associated with mid-size, secondary facilities. A greater reductions in the number of beds was associated with more rural facilities and those located in the central U.S. (confirming the smaller, more general hospitals as well). Interestingly, a greater reduction in beds was more strongly associated with non-academically affiliated facilities and lower HMO penetration rates. These relationships might be a function of the more rural location and smaller size of these facilities.

Table 4: Correlation of Independent Variables

	Integration	Change in Beds	Change in OP	Change in ALOS	RN/Total Change	General Primary	Secondary Mid-size	Tertiary, Complex	Psych	Teaching Affiliation	Rural	City	MSA	East	Central	South	West	HMO Rate
Integration	1.00																	
Change in	0.219 <.01	1.00																
OP Change			1.00															
ALOS Change		0.156 <.10		1.00														
RN/Total	0.164 <.10				1.00													
General Primary	-0.146 <.10	-0.397 <.001	0.217 <.01			1.00												
Secondary Mid-size		0.263 <.01			0.205 <.05	-0.534 <.001	1.00											
Tertiary Complex			-0.230 <.01			-0.299 <.001	-0.403 <.001	1.00										
Psychiatric				0.20 <.05		-0.225 <.01	-0.304 <.001	-0.170 <.05	1.00									
Teaching Affiliation		0.301 <.001				-0.355 <.001	0.315 <.001	0.199 <.05	-0.227 <.01	1.00								
Rural	-0.197 <.05	-0.396 <.001				0.385 <.001	-0.364 <.001	-0.253 <.01	0.329 <.001	-0.365 <.001	1.00							
City			0.178 <.05					-0.248 <.01			-0.376 <.001	1.00						
MSA	0.202 <.05	0.279 <.001	-0.264 <.01			-0.447 <.001	0.209 <.05	0.448 <.001	-0.236 <.01	0.301 <.001	-0.564 <.001	-0.554 <.001	1.00					
East														1.00				
Central		-0.219 <.01								-0.158 <.10				-0.362 <.001	1.00			
South		0.325 <.001	0.162 <.10							0.219 <.01	-0.178 <.05	0.221 <.01		-0.382 <.001	-0.375 <.001	1.00		
West			-0.154 <.10							-0.161 <.10				-0.266 <.001	-0.264 <.001	-0.299 <.001	1.00	
HMO Rate		0.149 <.10	-0.174 <.05		-0.142 <.10	-0.418 <.001	0.207 <.05	0.321 <.001		0.255 <.01	-0.394 <.001		0.466 <.001				0.178 <.05	1.00

Change in Outpatient Visits

The correlation analysis showed that outpatient visits significantly increased more in general service facilities, those located in mid-sized cities and in the southern region of the nation. This may be due to magnitude as substantial percentage increase of outpatient visits for these facilities could simply mean adding a single outpatient clinic or program not previously offered.

The only significant negative association was with HMO penetration rates, meaning that a greater increase in outpatient visits was related to lower HMO enrollment. This might simply be caused by the greater opportunity of increase of outpatient care in the more rural or smaller town settings where HMO rates are not as substantial. Facility integration was not significantly associated with a mean change in outpatient visits.

Change in Average Length of Stay

In addition to the strong relationship with a reduction in beds, a decrease in average length of stay was associated with psychiatric facilities. This finding is encouraging in that many facilities that integrated were psychiatric facilities, and because there is no significant relationship with facility integration, the average length of stay numbers are not being skewed by including the psychiatric numbers within integrated systems.

Change in RN FTEs as a Percent of Total

A change in RN FTEs as a percent of total FTEs resulted in three significant correlations. First, as the proportion of RN FTEs increased, the facilities were more

likely to be integrated. Secondly, a higher proportion of RN FTEs were associated with mid-size secondary facilities. And third, a greater RN FTE proportion was associated with lower HMO penetration rates. These results are appealing intuitively as one often associates stronger managed care environments with fewer high-level clinicians, having a reputation for encouraging patients to use less clinically intensive staff. In addition, integrated systems may be focusing more on administrative reductions rather than clinical consolidations, as previously discussed, and therefore are shedding other FTEs faster than RNs.

Service Mix Category

Because this variable is categorical or an indicator variable, dummy variable were used for the 4 categories that make up the construct Service Mix. General service, smaller facilities have a significant negative correlation with facility integration, confirming that an integrated system is less likely to be associated with primary or general service facilities. This was predictable since most integrated systems are not classified as such even if they include a smaller general service facility. A negative association was found between smaller facilities and academic affiliation, large metropolitan locations and HMO penetration rates. This is consistent with the lack of general service facilities not consistently having teaching programs and being located more often in rural areas.

On the other hand, secondary, mid-size facilities and the large complex facilities were found to be associated with urban, academic environments and greater HMO penetrations. This is one would expect as large complex VAMCs are usually in MSA environments and as discussed below, MSA environments have a greater managed

care penetration. Somewhat surprisingly, psychiatric facilities were more likely to be associated with rural and nonacademic environments, possibly because the VA may place such facilities in more remote areas.

Academic Affiliation

As mentioned, the likelihood that a facility has an academic affiliation was strongly associated with more urban environments, and that these facilities were located in the Southern states. Obviously, academically affiliated institutions are located throughout the U.S, but the stronger association exists within the southern quadrant. Also, there was a significant relationship between teaching affiliated facilities and higher HMO penetration rates.

Urban-Rural Category

This construct was partitioned into three dummy variables, rural, city, and MSA. In addition to the discussions above regarding this variable, mid-sized city facilities and not rural facilities were more likely to be found in the southern quadrant. HMO penetration rates decreased as the possibility of the facility being rural increased, as one would expect. Finally, as VAMCs or integrated systems are increasingly found in large MSA environments, they are more likely to be integrated, have an academic affiliation, and have greater HMO penetration rates.

National Quadrant

A significant positive relationship was found between facilities located in the Western U.S. and higher HMO penetration rates. Except for pockets in the Northeast and Central states, this is a likely finding as HMO rates have always been higher in the

West.

Multivariate Findings

Prior to the following presentation of results from the regression analyses, a brief explanation follows regarding the approach to the categorical constructs in the analyses. Each of the regression analyses had a dummy variable eliminated from each construct to provide a point of reference when interpreting the results. The dummy variable from each construct omitted from the regression model is called the reference category, and is the most frequent category for each construct (i.e., secondary service mix; MSA location; and, Southern quadrant). This way, dummy regression coefficients represent deviations of smaller groups from the largest group within each construct. Each dummy variable coefficient represents the mean difference in the dependent variable between a category and the reference category.

Although Polissar and Diehr (1982) claim it is generally considered incorrect to test for differences between categories of a construct when the overall construct is not significant, means-testing and correlation analyses indicated significant findings for some of the dummy variables and therefore the variables were retained. Although the significance of the construct is independent of the reference category, the construct can be significant with or without significant dummies. By adding together the dummy variable coefficients in a single construct, while keeping out the reference category, it can be determined whether the variables significantly improve the predictive value of the regression formula (Polissar & Diehr, 1982).

Dependent Variable #1: Cost per Bed Day of Care

Table 5: OLS Regression Results for Change in Costs per Bed Day of Care, 1993-1997

	Coefficient	Std Err	p	
Independent Variable				
Integration	.0329	.0388	.397	
Structural Characteristics				
Change in Beds	-.4493	.0822	.000	***
Change in ALOS	-.1118	.0429	.010	**
Change in Outpatient Visits	.1082	.0595	.072	*
Change in RN/Total FTEs	-.1128	.0939	.232	
Service Mix				
Primary, general	-.0363	.0340	.288	
Tertiary, complex	.0049	.0323	.879	
Psychiatric	-.0884	.0421	.038	**
Academic Affiliation	.0211	.0340	.537	
Market Characteristics				
Urban-Rural Location				
Rural	.0173	.0371	.643	
Mid-size City	.0388	.0305	.205	
National Quadrant				
East	-.0184	.0310	.554	
Central	.0246	.0320	.443	
West	-.0450	.0365	.219	
HMO penetration	.0940	.1046	.370	
df (Model, Residual)		15, 125		
R-squared		.3898		
Prob > F		.0000	***	

*** p < 0.01
** p < 0.05
* p < 0.10

Because distributions for the two groups were determined to be normal and equal, ordinary least squares (OLS) regression was performed on the dependent variable. Integration was the main independent variable and the other structural and market variables were used as controls for differences inherent in the facilities' environment for the study period FY1993-1997. Table 5 shows that integration did not

exert a significant influence on costs per bed day of care between the two groups, but four structural characteristics did.

- *Hypothesis #1: Not supported – Facility integration did not predict slower growth in costs per bed day of care over time compared to nonintegrating facilities.*

The model did demonstrate that a greater decline in beds was predictive of a greater the increase in costs per bed day of care. The greater decline in average length of stay, the greater the increase in costs per bed day of care. Also, there was a slight predictive value for outpatient visits. The greater the increase in outpatient visits, the greater the increase in costs per bed day of care. And finally, increased costs per bed day of care were significantly related to institutions less likely to be psychiatric facilities. This model explains approximately 39% of the variation in the model ($p<0.0001$).

Dependent Variable #2: Clinical:Administrative Staff Ratio

OLS regression (Table 6) found there to be no significant predictive value of integration on clinical:administrative staffing ratios.

- *Hypothesis #2: Not supported – Integration did not have a significant effect on increasing the proportion of clinical staff over administrative staff over time as compared to nonintegrated facilities.*

There is a significant inverse relationship with outpatient visits, meaning that with a greater increase in outpatient visits, clinical to administrative staffing declines. This is most likely due to the reduction of inpatient clinical staff as a facility moves its services to the outpatient setting, but maintains similar numbers of administrative employees. As one would expect, the regression found that the greater the increase in RNs as a percent of total FTEs, the greater the increase in the clinical staffing ratio

(p<0.001). The model explains approximately 22.7% of the variation in this model (p<0.001).

Table 6: OLS Regression Results for Change in Clinical: Administrative Staff Ratio, 1993-1997

	Coefficient	Std Err	p	
Independent Variable				
Integration	.0044	.0636	.945	
Structural Characteristics				
Change in Beds	.1744	.1348	.198	
Change in ALOS	.0940	.0704	.184	
Change in Outpatient Visits	-.1954	.0976	.048	**
Change in RN/Total FTEs	.5033	.1540	.001	***
Service Mix				
Primary, general	-.0300	.0558	.591	
Tertiary, complex	.0189	.0530	.722	
Psychiatric	.0228	.0690	.742	
Academic Affiliation	.0566	.0587	.336	
Market Characteristics				
Urban-Rural Location				
Rural	-.0286	.0609	.640	
Mid-size City	.0348	.0500	.487	
National Quadrant				
East	.0575	.0508	.260	
Central	.0111	.0524	.833	
West	.0966	.0598	.109	
HMO penetration	-.2359	.1714	.171	
df (Model, Residual)		15, 125		
R-squared		.2268		
Prob > F		.0037	***	

*** p < 0.01
** p < 0.05
* p < 0.10

The significant positive correlation between these two variables suggests a few relationships. As beds decline and outpatient visits increase, it would follow that fewer clinical staff are needed to care for inpatients. The strong association between RNs as a percent of total and clinical staff ratio is obvious – but assures the results.

Dependent Variable #3: Direct Staff Turnover

Similar to the previous models, integration did not have an effect on direct staff turnover. Overall, this model was not significant even though its explanatory power was approximately 12.7%.

- *Hypothesis #3: Not supported – Integrated facilities did not experience greater direct staff turnover over time than nonintegrating facilities.*

OLS regression modeling confirmed a predictive relationship between direct staff turnover and for those facilities located in the Eastern quadrant as well as tertiary, complex facilities. Because both of these are dummy variables, their interpretation is relative to the reference category from each construct. Specifically, the greater the increase in direct staff turnover, the greater the increase in likelihood the facility/ies are located in the East more than the South quadrant (Table 7; $p<0.05$). This relationship wasn't specifically hypothesized, but national quadrant was used as a control given the different regions of the country may have different levels of job opportunities/shortages for clinical care staff. This result seems to indicate that: direct patient care staff are more dissatisfied with their jobs within the VA in the Eastern quadrant over the baseline Southern quadrant; there may be insufficient programs at retaining staff in these facilities; or, simply there were more open job positions to take if one left the VA in this area.

Secondly, there was an inverse relationship to tertiary complex facilities. The model showed that as direct staff turnover increased, the likelihood that the facility was a tertiary complex facility rather than a mid-sized secondary facility significantly decreased. This may be because so many of the tertiary facilities are maintaining their services and programs rather than being the partner in an integration or as a stand-

alone facility that is being forced to substantially alter its clinical operations to remain viable.

Table 7: OLS Regression Results for Change in Direct Staff Turnover, 1993-1997

	Coefficient	Std Err	p	
Independent Variable				
Integration	-.0688	.0998	.492	
Structural Characteristics				
Change in Beds	-.0514	.2118	.809	
Change in ALOS	-.0014	.1105	.990	
Change in Outpatient Visits	-.1962	.1533	.203	
Change in RN/Total FTEs	-.2721	.2419	.263	
Service Mix				
Primary, general	-.0036	.0876	.967	
Tertiary, complex	-.1395	.0832	.096	*
Psychiatric	.0327	.1084	.763	
Academic Affiliation	.1112	.0921	.230	
Market Characteristics				
Urban-Rural Location				
Rural	.0229	.0956	.811	
Mid-size City	-.0143	.0785	.856	
National Quadrant				
East	.1652	.0799	.041	**
Central	.0669	.0823	.418	
West	-.0345	.0939	.714	
HMO penetration	-.1092	.2692	.686	
df (Model, Residual)		15, 125		
R-squared		.1266		
Prob > F		.275		

*** p < 0.01
** p < 0.05
* p < 0.10

Dependent Variable # 4: Timely Access to Care

The regression model did not find integration to be a significant predictor for changes in patient-reported problems with timely access to care.

- *Hypothesis #4: Not supported – Facility integration was not a significant predictor of changes in patient-reported problems with timely access to care.*

Table 8 shows that the results from the regression analysis found a relationship with two structural characteristics. The first significant predictor was change in beds and the second was academic affiliation. The greater the rate of decline in bed numbers, the greater the increase in patient reported problems with timely access to care ($p<0.10$). Whereas, if a facility were academically affiliated, the patient reported problems with timely access to care was expected to be higher ($p<0.10$). However, the overall explanatory significance of the model was not significant.

Table 8: OLS Regression Results for Change in Reported Problems with Timely Access, 1995-1997

	Coefficient	Std Err	p	
Independent Variable				
Integration	.0100	.0425	.813	
Structural Characteristics				
Change in Beds	-.1521	.0910	.097	*
Change in ALOS	.0353	.0476	.459	
Change in Outpatient Visits	.0549	.0658	.406	
Service Mix				
Primary, general	-.0208	.0375	.580	
Tertiary, complex	.0331	.0352	.349	
Psychiatric	.0581	.0466	.215	
Academic Affiliation	.0663	.0397	.097	*
Market Characteristics				
Urban-Rural Location				
Rural	-.0227	.0409	.579	
Mid-size City	-.0206	.0338	.543	
National Quadrant				
East	-.0119	.0344	.729	
Central	.0239	.0353	.499	
West	.0539	.0404	.184	
HMO penetration	-.0547	.1137	.631	
df (Model, Residual)		14, 126		
R-squared		.0871		
Prob > F		.6052		

*** $p < 0.01$
** $p < 0.05$
* $p < 0.10$

A possible explanation for the slightly significant decrease in patient reported

problems with access most likely is that most facilities have undertaken a concerted effort at improving customer service while integrating. On average, patients perceive the facilities to be improving helping them receive the care they need when they need it, whether integrated or not. The slightly significant finding that a reduction in beds results in less satisfaction with access may simply be because of a shift in emphasis from inpatient care to outpatient services. Academically affiliated facilities may seem even less accessible to patients and therefore be a good predictor of patient-reported problems with access.

Dependent Variable #5: Coordination of Care

The last model also did not find a significant predictive relationship between facility integration and changes in patient-reported problems with coordination of care.

- *Hypothesis #5: Not supported – Integration did not have a significant influence on patient-reported problems with coordination of care.*

Table 9 shows the results of the OLS regression were non-significant except for the change in outpatient visits. The greater the increase in outpatient visits, the more the patient reported problems with coordination of care increased ($p<0.10$). This slight explanatory relationship might be due to the shift from outpatient care from a historically inpatient-driven system causing patients to feel less satisfied with the planning, scheduling and general coordination of care.

Table 9: OLS Regression Results for Change in Reported Problems with Coordination of Care, 1995-1997

	Coefficient	Std Err	p	
Independent Variable				
Integration	.0157	.0503	.756	
Structural Characteristics				
Change in Beds	.0765	.1079	.480	
Change in ALOS	-.0838	.0564	.139	
Change in Outpatient Visits	.1303	.0780	.097	*
Service Mix				
Primary, general	-.0204	.0444	.646	
Tertiary, complex	.0380	.0418	.364	
Psychiatric	.0235	.0552	.671	
Academic Affiliation	-.0265	.0470	.574	
Market Characteristics				
Urban-Rural Location				
Rural	.0319	.0485	.511	
Mid-size City	.0089	.0400	.823	
National Quadrant				
East	-.0235	.0407	.564	
Central	.0320	.0418	.446	
West	.0383	.0479	.425	
HMO penetration	.0264	.1347	.845	
df (Model, Residual)		14, 126		
R-squared		.0735		
Prob > F		.757		

*** $p < 0.01$
** $p < 0.05$
* $p < 0.10$

OLS Regression on 1993 Preintegration Values

The lack of significance between facility integration and the dependent variables was further analyzed by testing whether the integrated and nonintegrated facilities have the same relationship with the independent and dependent variables. Perhaps the facilities in the two groups had different structural and market characteristics that were more predictive of operating effectiveness and perceived quality than only changes over time?

An interaction term was generated between integration and the three continuous control variables of facility structure: change in beds, outpatient visits, and average length of stay. Ideally, separate regressions for the integrated and nonintegrated facilities should be run on each dependent variable and then the results would be pooled. But due to limited observations, interaction effects were added into the existing regression models. This tested for preexisting differences between the two groups that might be the explanation why integration was not having a significant effect on the dependent variables. The following results occurred:

1. The interaction terms were not found to have a significant influence on costs per bed day of care. The explanatory power (R^2) did increase from 33.2% to 39.6% ($p<.001$).
2. Two interaction variables (integration and 93 Beds, integration and 93 outpatient visits) were significant in the second model for the change in clinical to administrative staff ratios. This shows that facilities destined to integrate have different numbers of beds and outpatient visits than nonintegrated. However, the analysis groups the preintegration facilities together into their subsequent integrated systems for analysis and, therefore, the numbers are larger than the stand-alone facilities. When the analysis is conducted with all facilities separate, there is no significant influence of the interaction terms. However, the explanatory power of the model did increase from 14.8% to 28% ($p<.001$).
3. The interaction terms had no significant influence on the model for a change in direct staff turnover. The model remained not significant as well.
4. The interaction terms had no significant influence on the model for a change in patient-reported problems with timely access to care. The model went from being

slightly predictive overall to no significance when the interaction variables were added.

5. One interaction variable, integration and 1993 average length of stay, was slightly predictive for changes in patient-reported problems with coordination of care ($p<.10$) even though change in average length of stay was not. This implies that pre-existing differences in the average length of stay had an influence on the dependent variable. Overall, however, the model went from being slightly predictive overall to no significance when the interaction variables were added

One can conclude that the interaction terms were not a stronger predictor of differences in the dependent variables than looking at the main effects. The group differences tested by the interaction effects were better tested and described in the bivariate testing of the group means than the results from the five regression models.

Chapter 6: Primary Data for Assessing Integration Effects

Case studies and reports produced by the initial MDRC/Sepulveda project are accessible to me for this dissertation because of my own direct experience on the project from 1996-1997 and my status as a Health Services Research and Development Pre-Doctoral Fellow. Aspects of facility integration ascertained from the original project such as the relationship of the integrating entities and detailed information about the executive leadership, staff morale, and cultural fit can therefore be used in addition to the quantitative analysis to determine possible influence on operational effectiveness and patients' perceived quality. When only secondary data is used, one cannot ascertain directly the strategic intent or staff perceptions of merger in sample hospitals. This prevents researchers from addressing the issue of why and how changes in operating practices did or did not occur. Hitt et al (1998) argue that case studies are appropriate in answering "why" questions about contemporary events over which the investigator has little or no control.

Initial MDRC/Sepulveda Project

As mentioned in the introduction to this dissertation, the Under Secretary for Health originally asked that a systematic assessment and evaluation of VA facility integration be performed to facilitate the integration process and improve future integration efforts, with a specific focus on management lessons that could be learned. Beginning in 1996, the Management Decision and Research Center (MDRC) in Boston and the Sepulveda (CA) Center of Excellence for the Study of Healthcare Provider Behavior designed a study that would analyze facility integration using a framework

comprised of the structure, process, and outcomes of integration and characteristics of integrating facilities. From September 1996 – September 1997, my formal role was of research assistant on the Sepulveda team, and often the role was expanded to project manager. Tasks included: collaborating on the conceptual model, full literature search and writing the brief review, participating with variable identification and selection, instigating data requests and maintaining all site documents, data calculations and presentation, interview protocol development, 2 full-site integration visits for interviews, and writing site reports. This project continued through 1999 for the MDRC and Sepulveda team, although my tenure as a research assistant ended because I took a different job in September 1997. During these last two years of the project, Phase One was finalized, while Phase Two began and ended after I left the project.

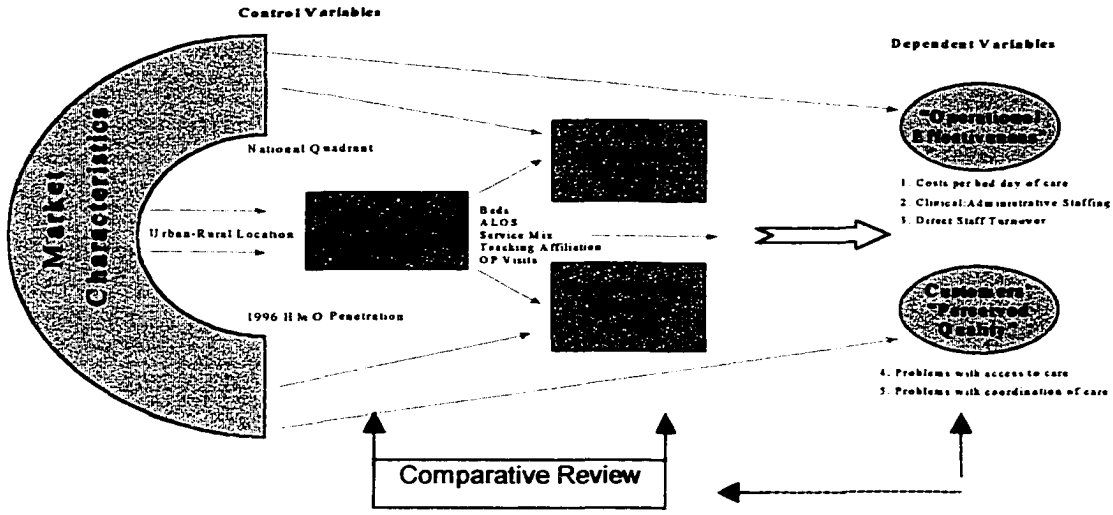
The first phase of the MDRC/Sepulveda project was based on a comparative approach, involving three sets of analysis. The first was an abbreviated literature review and development of an applicable conceptual model to better analyze and explain the process of health care integration building upon the existing body of knowledge. The second analysis, document coding, was performed on the collected integration documents and reports from 14 of the VHA mergers that had already occurred (13 of inpatient facilities, one of outpatient facilities only, which was not included in the dissertation analysis. An additional integration, North Texas, was added to this study because it met the timing parameters for analysis). The third step was to analyze new information from interviews, documents, and data obtained during brief (2 day) site visits to integrating facilities and from telephone interviews. The first summary report was published in July 1998.

In approximately year three (1999) of the MDRC study, an analysis of administrative data, such as survey, fiscal and clinical data, was performed to assess the quality, access and financial outcomes of facility integration. The second report, published in December 1999, focused on describing the organizational and operational structure of the integrating systems and the effects of integration on system performance. This was accomplished by analyses of administrative data maintained by VHA central data processing facilities. The analyses were based on data from three sources: a survey of integrated system directors; a survey of staff in 19 integrated systems; and administrative data for the integrated facilities and selected comparison facilities. Group and individual interviews were conducted in the summer of 1997 with senior and middle managers and with representative staff and clinicians from all facilities in the 13 systems included in this dissertation (not North Texas). In addition, a survey of all system department heads and service chiefs was administered in September 1997, with a 91% response rate.

The information to be used in the following qualitative review is taken from the site report summaries and relevant sections of tables. It is used to discuss and either support or refute the specific hypotheses put forward in this paper. I acknowledge and thank the initial team members for their contribution to the original project and for guidance during this project (Carol VanDeusen Lukas, EdD, Principal Investigator, Brian Mittman, PhD, Co-Principal Investigator; Elizabeth Yano, PhD, Sepulveda; Lisa Reubenstein, MD, MPH, Sepulveda; Mingming Wang, MPH, Sepulveda; John Hernandez, PhD, Sepulveda; Barbara Simon, MS, Sepulveda; James Macdonald, MSW, MDRC).

Conceptual Model: Revisited

Exhibit 6: Dissertation Conceptual Model



Re-examining my conceptual model by way of the dependent and control variables provides a similar framework in which to present information gleaned from previous interviews and study documents for studying the short term effects of integration. The assessment of the process of integration is given first to better present the situation pre-integration, and a discussion on the resulting short-term post-integration structures and outcomes follows. Each of the five research questions presented early will be re-presented with an assessment as to whether the findings from the original study support the hypotheses in this paper. Using tables and/or qualitative data, I hope to paint a more full picture of VA facility integration as learned from the original MDRC/Sepulveda project and possibly provide richer detail and alternative explanations for the lack of significant findings regarding the effects of integration.

Processes and Structures of Integrating Systems

Facility Integration Defined by Merger and Acquisition

Because of the number of terms bantered about in the discussion of integration, Exhibit 7 outlines the organizational characteristic of each of the facilities becoming "integrated" systems and whether the site that was "acquired" was specialized after the formal integration. Specialization refers to the extent beds were devoted to nonacute care such as nursing home care, long-term psychiatric care, or domiciliary bed care. Whether integration is classified as a merger or acquisition in the following description is based on relative size of FTEs, budget, beds, admissions, etc. and often the existence of campus specialization (reducing location of certain inpatient care services to one site). Clear acquisitions were large academic medical centers and small community or specialized hospitals. Medium community hospitals were in more fluid organizational combinations.

Exhibit 7: Integrated System Size and Post-Integration Specialization

ACQUISITIONS

System	Large Tertiary	Medium Community	Small Community	Acquired site specialized?
Connecticut	X	X		Psych
Maryland	X	X	X	No
New Jersey	X		X	LTC – Psych
Northern Texas	X		X	n.a.
Palo Alto	X		X	LTC – Dom
Pittsburgh		X X		General – Pysch
Puget Sound	X	X		LTC – Psych
South Texas	X	X		LTC
Western NY	X		X	LTC

LTC = long term care
Dom = domiciliary unit

MERGERS

Black Hills		X X		No / No
Central Alabama		X X		No / LTC – Psych
Chicago	X X			No / No
Northern Indiana		X X		Psych / No

Source: "Analysis of Facility Integrations", July 1998.

The original MDRC project looked extensively at the process and definition of integration among the various participants and found that judgments about the progress and completeness of integration depended in part on how integration was defined. While leaders at several systems declared that their integrations were complete because there was a revised organizational chart, new leadership, and staff assigned to their positions. It seemed that the real issue was that by calling it complete provided them a clear conclusion to integration so they could move on to other challenges. Yet staff in many of these same systems felt that integration still was not complete due to reorganizations and changes in operations.

To get a better understanding at just how far along the integrations were at the time of the September 1997 survey, the original project defined five dimensions or stages of integration, ranging from administrative integration to structural integration (administrative and clinical), to operational integration (administrative and clinical), and finally cultural integration and asked the participants to rate their progress. This was combined with internal documentation received from the site visits as well. The MDRC/Sepulveda study found:

- All were administratively integrated; had a new director, the data systems merged, created a new name
- Structures were administratively integrated for 12 systems and clinically restructured for 9; organizational charts approved, new service chiefs appointed, and staff reassigned.
- Two-thirds were operationally integrated (both clinically and administratively); medical by-laws consolidated and policies and clinical protocols homogenized.

- None were fully culturally integrated; staff continued to think of themselves as employees of a single facility.

Because most of the integrations were administratively combined, most structurally and operationally integrated, yet none culturally integrated that my dissertation categorized integration more similarly than not. Undoubtedly, different stages of structural and operational integration can have an influence on operational effectiveness and perceived quality, but there were more similarities in their progress than differences. This permitted my treatment and experimental groups to be categorized as 1 or 0. In the original study, however, the different processes of integration for each of the systems were examined. The lessons to be learned are discussed in the next section.

Processes and Methods

Previous studies of healthcare facility integrations had proposed a sequence of typical process phases. VA headquarters published guidelines based on this sequence that would lead participating VAMCs through the five major phases. These are strategic assessment, strategic planning, detailed implementation planning, integration implementation, and evaluation.

The MDRC study concluded that most VA integrated systems follow a "rough order", or developmental progression, in bringing facilities together. The activities outlined for each phase occurred across all systems. However, they did not always occur completely or in the prescribed order. Most integrated systems performed their strategic assessment quickly and usually after a request to integrate had already occurred. Strategic planning and detailed planning were usually influenced by the

status of the new leadership. Most of the executive directors were put into place early in the process. Although implementation was at the core of the integration process, a rush to move forward with integration often overlapped with the planning phases and while plans were being written during the first six months. This sometimes created incongruous planning and implementation. Evaluation was rarely implemented as an organized phase, but rather occurred as facilities reviewed VHA performance measures and assessed the initial success of programs ("Analysis of Facility Integrations", July 1998).

The discoveries from the survey data have been a tremendous assistance for subsequent integrations taking place in the VA. These levels and activities of integration of the initial group have provided lessons for current initiatives; meanwhile, the initial integrated systems are still evaluating their progress. Having so few treatment observations (n=14) makes quantitative analysis, based on the stages of integration, difficult. The information provided here demonstrates the unique process each system followed.

Structure and Systems of Facility Integration

The MDRC/Sepulveda study found that the structures of the integrating systems were strongly influenced by the characteristics of the facilities before integration. Systems that were dissimilar in terms of size, complexity and academic affiliation tended to integrate with different structures than systems that were similar on those dimensions. Referring back to Figure 3 (Pre-Integration Facility Characteristics), the ten systems that were identified as having dissimilar partners usually completely maintained campus specialization (single site for inpatient care) and had less

duplicative service chiefs and staff at each campus. The four similar systems (all small to moderate sized, low to moderate complexity, and limited academic affiliation) had no campus specialization, operating still primarily independently, and therefore had more overlapping staff and programs. In conclusion, dominant-partner systems show greater, or at least faster, progress toward structural integration than equal-partner systems. The following exhibit demonstrates the extent to which these systems combined their departments and what impact that had on services and policies.

Exhibit 8: Structural Integration: Clinical and Administrative Operational Integration

System	Similar or Dissimilar	% Clinical Depts Combined or Consolidated	% Admin Depts Combined or Consolidated	% Same Policies in Place: Combined Depts
Central Texas	D	75.9	89.4	97
Connecticut	D	90.0	100	96
Maryland	D	70.4	61.5	74
New Jersey	D	77.8	84.6	83
North Texas	D	n.a.	n.a.	n.a.
Palo Alto	D	100	100	96
Pittsburgh	D	100	82.4	48
Puget Sound	D	100	94.1	93
South Texas	D	95.3	100	92
Western NY	D	100	100	89
Black Hills	S	81.8	100	56
Central Alabama	S	40.9	84.6	22
Chicago	S	20.0	100	25
Northern Indiana	S	62.5	100	86
	n.a.	n.a.	n.a.	n.a.
Average		75.6	80.1	77

Source: VHA Facility Survey, 1997; adapted from "Analysis of Facility Integrations", July 1998.

Moving to an integrated system, leaders can either simply adopt the organizational structure of one of the facilities or they can reorganize the system to create a new structure with redefined functional areas and reporting lines. The MDRC study found that with changing demands on the system - the general health care environment, the desire to create an integrated delivery system and the need to manage across distances, 10 of the 13 integrating inpatient systems felt a new

structure was needed to operate effectively. Only three systems integrated without also reorganizing (VanDeusan Lukas, 1998). Of the systems that did reorganize, half adopted new structures as part of the integration process, and the other half integrated first under their existing organizational structure and reorganized later. It was found that reorganizing while integrating makes the process more complicated and possibly slower, but if new leadership was appointed quickly after integration was approved, and clear roles and responsibilities were assigned to service chiefs and departmental managers, the transition was significantly less difficult.

Testing the Hypotheses with the Original Study Findings

Operational Effectiveness of Integration

Question #1: Does facility integration help reduce expenses?

Systems seek to lower costs by eliminating redundant positions, reducing bed size, through clinical consolidation, better utilization management, and reduction and integration of administration across sites. Changes in costs among integrated vs. nonintegrated facilities were initially examined to see whether integrations had less pronounced cost increases over the first few years. At the same time, it was recognized that the VAMCs had been working exceptionally hard at expanding their patient bases (unique number of veterans seen or covered lives when capitated) as this is crucial for the budget allocation for all VA medical centers.

With the shifts in costs and patient bases occurring simultaneously, the MDRC/Sepulveda project measured efficiency cost savings that might be attributed to

facility integration as cost-per-patient. This is different than my study that uses cost per bed day of care, as I wanted to include a measure for treatment management and utilization. Although having described different integration stages, the MDRC/Sepulveda study used a binary approach to integration when examining short term cost effects. They compared 13 integrated inpatient systems and one outpatient system against the remaining VAMCs in the nation, similar to the analysis in this paper. Between FY1994 and FY1997, the original study found that the total costs-per-patient decreased on average 8% for integrated systems and 2% for nonintegrated systems, although the cost-per-patient range for the integrated systems was substantial. In fact, the Palo Alto Healthcare System, always at the high end of the range, actually increased costs between the two study years. Most of the average decrease was reflected in dropping support and clinical costs, with slight increases in administrative costs-per-patient for both groups. See Exhibit 9 below.

Exhibit 9: Change in Administrative, Support and Clinical Cost-per-patient - 1994-1997

Group	Total Cost	Administrative	Clinical	Support
Integrated	-8%	+1%	-9%	-12%
Nonintegrated	-2%	+4%	-2%	-6%
Range: Integrated				
FY1994	$4,370 - $8,960			
FY1996	$3,650 - $10,480			
FY1997	$3,100 - $8,450			

Source: "Analysis of Facility Integrations", July 1998.

This is significantly different than the findings of the dissertation research discussed in Chapter 5 because of the difference in denominator. Because the unique patient base for facilities is increasing, the costs are spread over an increasing denominator, unlike bed days of care, which is decreasing drastically. The value in studying bed day of care is understanding the tremendous shift from inpatient to outpatient care and decreasing lengths of stay, regardless of the number of patients, so

that inpatient capacity and infrastructure can be reduced.

Question #2: Does facility integration redirect staff resources from administration to direct care?

The MDRC and Sepulveda researchers found no evidence to support the notion that integration would redirect resources from administrative support to direct patient care by FY1997. Administrative to total costs remained unchanged between FY1994-1996, and by FY1997 it had risen 9.4% for integrated systems versus 5.4% for nonintegrated. That study also found no significant difference in the number of clinical FTEs proportionate to administrative FTEs for either group, cross-sectionally and over time. Because the facility survey found that integrated systems have combined both clinical and administrative services to varying degrees, it may be the structural reorganization that is having a greater effect on the general operations and staff perceptions than on the bottom line. For instance:

- Administrative departments either combined or continued parallel functions at each campus with a single chief supervising both campuses.
- Administrative departments consolidated and therefore substantially shifted their staff and workloads to the newly consolidated department.
- Clinical departments were more likely to specialize by campus with each campus functioning day-to-day somewhat independently. Even though there was campus specialization, less workload was reported to have shifted after integration, which leads one to conclude that this differentiation of services offered was most likely occurring before integration took hold.

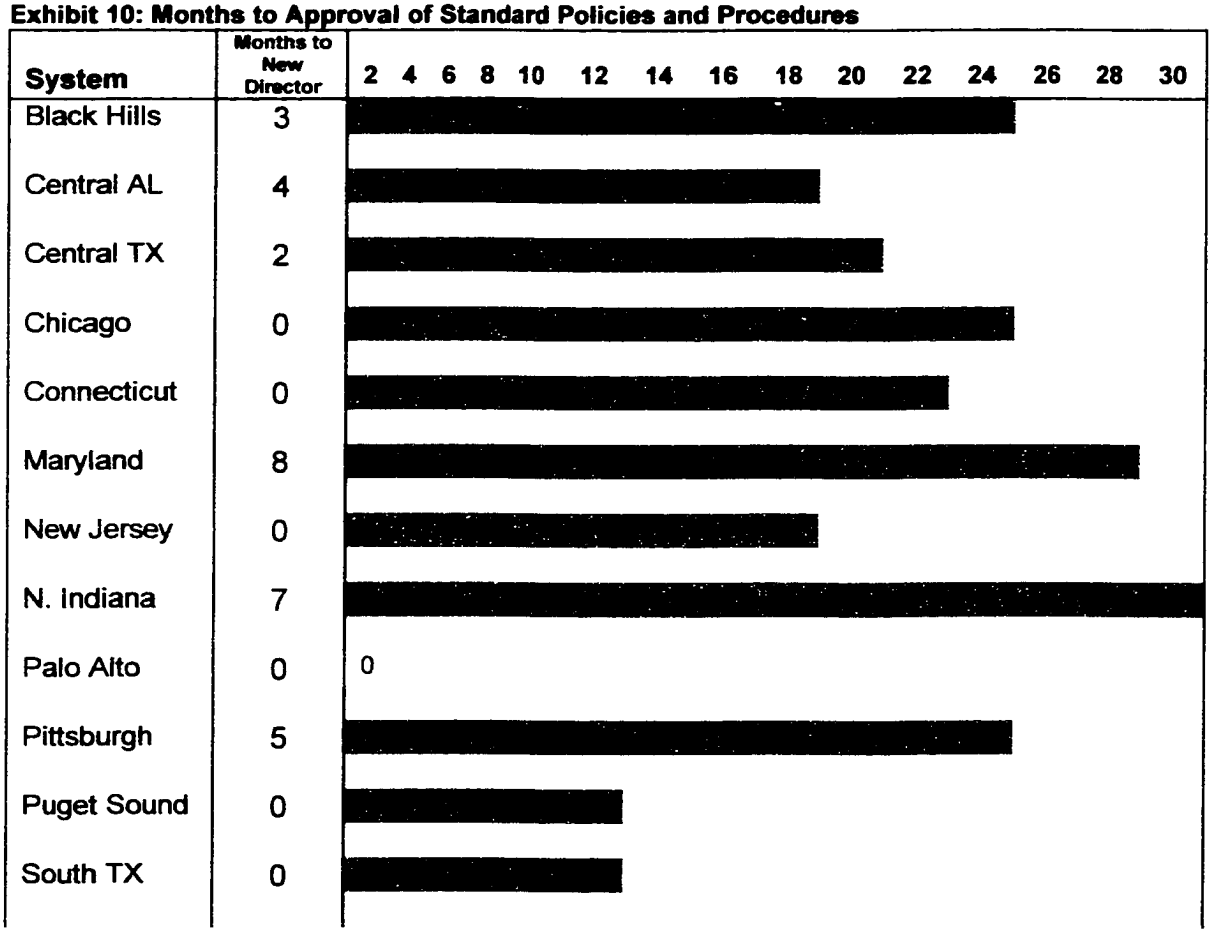
Question #3: Does facility integration create a greater level of staff turnover?

Integration can create significant and sometimes disruptive changes in organizational structures and processes, affecting staffing patterns and assignments. If staff morale declines, this can result in higher turnover and lowered productivity. In

hypothesis three of this dissertation, it was hypothesized that integration would have an impact on staff morale and would therefore translate into higher turnover.

Two dimensions were examined by the MDRC/Sepulveda project team to determine what might be causing some integrations to be more successful than others: duration of integration planning and implementation, and level of staff morale and satisfaction. Because change is inherently stressful and creates uncertainty, it was assumed that the shorter the duration of the process, the less stressful impact on staff. Duration equals the number of months between the approval of integration and the adoption of common policies across campuses. Figure 10 illustrates the varying time it took for the systems to get leadership and standard policies and procedures into place.

Exhibit 10: Months to Approval of Standard Policies and Procedures



Western NY	0	[redacted]
Average	2.5	[redacted]

Source: "Analysis of Facility Integrations", July, 1998.
"+" = Facility was still in progress when survey was completed.

In the Chapter 5: Results, there was shown to be a slight association between a change in direct staff turnover and integration in the bivariate analysis ($p<.10$). The MDRC/Sepulveda survey provides further insight as to why a significant result was found. The survey showed that morale scores greatly varied among integrations on initial morale (1.86-3.02), and although they improved during the first two years of integration, they still varied greatly (1.98-4.10) on a 5-point rating scale. This variation may be why there was a less strong relationship between turnover and integration than hypothesized. Because the duration for implementation is unique for each of the integrations, it makes it difficult to establish causality between integration and the change in direct staff turnover. It may be the internal operations or leadership rather than new structural configurations that are upsetting to the staff. For example, the MDRC/Sepulveda survey found that staff more consistently rated satisfaction lower with the planning processes than with the perceived impact of integration on their own staff morale.

Perceived Customer Quality

Question #4: Does facility integration improve veterans' perception of access to and coordination of care?

The MDRC and Sepulveda also examined patient satisfaction as measured by the Customer Service Standard scores from the VHA National Ambulatory Care Survey

for 1995 and 1996. Two of the three domains they studied were access/timeliness to care and the coordination of care, similar to my study. A cross-sectional analysis was performed as well as linear modeling, including interaction terms for all three dimensions of year by integration, year by type of site, and integration by type of site. Results varied as much as the integrations themselves. Mostly, the results indicated that secondary facilities had better satisfaction scores than lead or dominant facilities in integrated systems. Integration did not produce significant declines in any domain of patient satisfaction as compared to nonintegrated facilities.

Communication and Culture

The discussion from the original study and the conclusions that resulted from it focused heavily on the importance of communication and the impact integration had on staff. The VA, and most healthcare facilities, experience continuous change with varying levels of disruption and change for employees and customers (patients). The VA has been subjected to especially significant changes in recent years due to budget and staff reductions, a change in emphasis of care in the outpatient setting, and increased competition with the private market for patients.

The change brought about by integration is of a different nature than the changes mentioned above. It involves more than one facility, which makes the entire process more complex. Communication and support must be compatible with, and appropriate to, the cultures of all the integrating organizations – and many of the problems uncovered with efficient planning and implementation during integration were the result of stark differences in the facilities' organizational cultures (VanDeusan Lukas, 1998).

Information from the MDRC/Sepulveda survey showed that managers at the integrating facilities generally used a variety of communication strategies, including Town Hall meetings, email and newsletters. These were conducted or administered with varying frequency, with the hope that clear communication would hopefully reduce anxiety about organizational change. Town Hall meetings were found to be the most effective when they were held when all staff from all facilities could attend, the agenda presented full information even if only the planning stage, and there were follow-up meetings between service leaders and their staff. Email and newsletters were less frequent, and often less informative, and were used in a more "broadcast" manner. Most facilities did not seem to have any sort of a formal communication strategy plan. Staff that generally had a positive attitude toward management most often responded with positive comments regarding the communication patterns, while those with negative attitudes often responded negatively. Staff always reacted better to even bad news (i.e., reductions in staff and reassignments) when communication was clear, honest, and complete.

Cultural integration was found to be the slowest aspect of integration and the last to be implemented formally. At the time of survey, not one of the integrated systems was integrated culturally. In Chapter 2, examples were given of business and healthcare mergers that failed due to the inability for management to merge cultures of participating organizations. Even though VA facilities benefit from already being a part of a single, national system that brings together the VAMCs under a set of comparable policies and operating parameters, there still exist significant differences in individual facility culture. Promotion of cooperation and bonding were undertaken in different ways for some of the systems, with the most well-received tactics being:

- Single system name and identity
- A Joint Commission accreditation process brought people together internally to address an external force and learn about other staff's contributions to the team
- Creating expectations and strong opportunities for all staff
- Holding planning meetings at a neutral site, and
- Having joint social events as another way to encourage people to get to know each other away from work. (Adapted from "Analysis of Facility Integrations", July, 1998).

Conclusions

The findings from the original MDRC/Sepulveda project are sometimes similar and sometimes dissimilar from my dissertation findings. First, despite the different measures of cost, the two studies found integrated facilities experienced overall cost decreases in clinical and support costs while administrative costs increased. This does not support the general rhetoric or specific hypothesis that facility integration eliminates administrative duplication substantially enough to improve clinical to administrative expenditures. The MDRC/Sepulveda study did show slight improvements in expenses per patient, but the argument could be made that a dwindling patient base simply due to demographics is going to force the VHA to re-evaluate how much money spent is too much, and possibly considered reducing overall capacity.

Second, the MDRC/Sepulveda findings provided insight into why there was no significant relationship between integration and clinical to administrative staffing ratios. The survey found that much of the administrative and clinical staffing held constant because of the parallel functions or specialization at each or every of the campuses. There were not clearly defined efforts to reduce staff because of the consolidation of departments, and therefore normal reductions-in-force and other attrition programs made integrated systems operate similar to their nonintegrating VAMCs.

Third, as mentioned in the discussion previously, the relationship between a change in direct staff turnover and integration is most likely due to process rather than integration status only, making a review of the original project's findings quite helpful. Staff reported more stress and less satisfaction with integration initially, and despite improvements over time, eight of the 13 systems surveyed still reported a negative impact on integration. Those that had been integrated longer had greater improvements. Integration's impact on morale was found to be related to type of system (worse for equal vs. dominant partner systems) and the proportion of departments not structurally integrated (fewer integrated departments had more positive impact on morale). These findings make an argument for analyzing facility integration by time and type to understand the changes in staff that might occur. Additional observations in the treatment group would have allowed for more precise analysis. However, only 14 integrations could be included in this study, thereby limiting the amount of sub-category analysis.

Finally, the linear modeling performed by the original research team confirmed the lack of a significant relationship between integration and patient satisfaction with care, similar to this dissertation. The positive interpretation could be that although integration did not improve patient satisfaction, it also did not cause a decline in the veterans' perception of receiving timely care or worsen the coordination of care received at facilities undergoing substantial re-organization.

The original MDRC/Sepulveda study clearly showed that the age of the integrating system is an important determinant of progress toward structural organization, cultural integration, and management's' perceived impact of integration. It is apparent from the information gleaned from the MDRC/Sepulveda survey that most

of the integration processes were in progress and therefore a second follow-up survey would paint a fuller picture as to how these systems are progressing toward true integration. Despite this, the lessons learned from the survey data were of great interest to the original MDRC/Sepulveda study and have assisted my dissertation research in helping to understand the unique complexities of facility integration.

Chapter 7: Discussion

This dissertation examined whether or not short term operating changes and increased satisfaction with care result from inpatient facility integration within the VHA. This organizational strategy was initiated in 1995 and continues to be an advocated solution for improving efficiency and service within the Veterans Health Administration today. Results from this analysis found that integration, or the merging, acquisition or consolidation of VA medical centers, had very little immediate impact on measures of operational effectiveness and customers' perceived quality of care. The analysis showed that there were more similarities among VAMCs than differences, regardless of integration status, after controlling for potential variation due to structural and market characteristics such as facility size, complexity, staffing, teaching status, and geographic location.

Short-term Outcomes of Facility Integration

Facility integrations are part of the VA's nationwide strategy to restructure its healthcare delivery system to improve access to and efficiency of care provided to our nation's veterans. The VA's rationale is that integration might provide significant benefits to veterans, primarily because the VA can reinvest savings from the resulting economies of scale, reduced duplicative services, and rationalized care into further enhancing veterans' service availability and quality. The characteristics of integration for each set of facilities are unique, yet most integrated systems followed a similar process and progressed through similar stages. This provided enough homogeneity to study integration as a binary variable (integrated vs. nonintegrated).

Research suggests that clear rationales for acquisition, while necessary, are not sufficient for high performance (Shanley & Correa, 1992). Demand for real value, whether economic or quality-based, may be a primary driver for selecting integration as an operational strategy for encouraging efficiency and improvement. Theoretical promises of economies of scale, reduction of duplication, and cohesive, coordinated service delivery make the strategy appealing in any industry. However, the issue of how integration affects acquisition performance is not settled (Datta, 1991). There has been a tremendous amount of rhetoric regarding the promises of merger, consolidation, and integration as the panacea for facilities or firm ultimate success, with little evidence to support it from the healthcare industry (Alexander & Morrisey, 1998; Bellandi, 1999; Bogue et al, 1995; Clement et al, 1995; Coddington et al, 1996; Colton & Colton, 1998; Danzon, 1994; Goldberg, 1999; Shortell et al, 1987; Walston et al, 1996). Even more specific to firms with seemingly good strategic and technical fit, Chatterjee et al (1992) hypothesized but failed to find a consistent relationship between performance gains and the degree to which the merging firms even shared similar technologies or service lines. These authors also found large variance in performance among acquiring firms engaged in mergers of similar strategic fit, making it difficult to argue that mergers will be successful because of similar ownership, services, or technology. As mentioned earlier, Jemison and Sitkin (1986) found that while strategic fit is important, it is not a sufficient condition for superior acquisition performance.

Difficulties in measuring performance and the difficulties of using organizational self-reports of performance are part of the reason for the trend in studies of acquisition results towards using market-based bellwethers such as stock price changes or indicators of divestiture. Neither measure is appropriate for a public sector organization

like the VA, however. Immediate outcome measures such as changes in operational effectiveness and perceived quality are more appropriate in measuring integration's immediate effects. This dissertation found there were virtually no consistent pre-integration characteristics of the facilities.

The dependent variables may not have been significantly affected by facility integration because organizational level analyses create too much heterogeneity within the measure. It is difficult to pinpoint exact cause and effect when so many factors influence cost and quality. In addition, the short-term nature of this study may not have allowed sufficient time for benefits to accrue.

Operational Effectiveness

In this study, measures of short-term operational effectiveness did not provide strong support for the hypothesized improvements resulting from integration status. The lack of support for the hypotheses is consistent with most of the findings outlined in the business and healthcare literature. Costs per bed day of care were not constrained for integrated facilities due to a reduction of duplicative administrative and support programs as hypothesized. Total input costs increased for all facilities in the study due to a dramatic rise in administrative expenses thereby increasing costs of bed day of care for both integrated and nonintegrated facilities. In addition, significant reductions of inpatient units of care, such as bed days and average length of stay, were witnessed among all VAMCs and were not enhanced by integration activities. However, reductions in these operational markers, as well as an increase in outpatient visits, were predictive of significant increases in costs per bed day of care for all facilities most likely due to the large amount of inpatient overhead.

Secondly, it was hypothesized that integrated systems would quickly find opportunities for reducing the number of administrative employees due to administrative consolidation and therefore increase its clinical staff proportionately. However, no support was found for an integration effect on clinical to administrative staffing levels. On average, all facilities experienced a reduction in the proportion of clinical to administrative staff. In fact, the only significant predictor of clinical staffing levels was a significant shift from inpatient to greater levels of outpatient care, resulting in lower clinical to administrative staff levels. This was most likely a result of moving inpatient clinical staff to the outpatient setting while maintaining adequate levels of administrative staff to operate the facility. Integrated facilities seemed to have no particular advantage in increasing the proportion of resources devoted to direct patient care.

Finally, no support was found for a link between integration status and direct staff turnover. Contrary to the possible operational advantages hoped from integration, it was thought that integrated facilities undergoing substantial organizational change might create a less desirable work environment and therefore experience greater direct staff turnover. This was found not to be true. However, selected structural characteristics and market environments of a facility were found to be significant predictors of the amount of direct staff turnover. Staff in large tertiary facilities were more likely to stay with their positions (less direct staff turnover), while facilities in the Eastern United States experienced higher levels of turnover, possibly due to better or more plentiful job opportunities.

Despite a lack of strong findings regarding integration effects, the analyses did find interesting relationships among other independent variables and outcomes. VA

inpatient facilities continue to operate with high fixed costs. As the GAO found, and was mentioned earlier in the paper, when VAMCs reduce services or program they may close beds, but they rarely close hospitals (GAO/HEHS 98-64, 1998; Schwartz and Joscow, 1980). This is most likely leading to the increased costs per bed day of care despite decreasing bed numbers. However, because average length of stay is decreasing, there are consequently higher costs to spread over fewer bed days of care.

Although there is no correlation between a change in beds and outpatient visits, one could use similar reasoning when explaining why an increase in outpatient visits is associated with an increase in costs per bed day of care. Shifting patients to the outpatient setting leaves the sicker ones to be treated as inpatients, incurring proportionately greater costs to treat and spreading fixed costs over fewer bed days of care. Evidence to support this argument can be found in additional correlations. Table 4 (Correlation of Independent Variables) showed that small and more general facilities experienced significant reductions in the bed numbers while simultaneously experiencing significant increases in outpatient care. This possibly confirms that even the smallest VAMCs institutions are staying open despite spreading fixed and operating costs over fewer and fewer inpatients, when the best solution to reduce expenses might be total consolidation of care at fewer inpatient facilities.

The final predictive relationship that was found significant was between costs per bed day of care and psychiatric facilities. Because secondary facilities was removed from the equation and made the reference category, this finding can be interpreted as psychiatric facilities are significantly less likely to be a predictor of increasing costs per bed day of care than secondary, mid-size facilities or systems. Most likely, mental health services and facilities are not experiencing significant

reductions in beds like the acute facilities and are, therefore, holding expenses more constant over bed days of care.

Perceived Quality

To only examine measures of operational effectiveness would ignore the impact broad organizational changes such as facility integration may be having on patients' perception of care received. Undoubtedly, the VHA and its medical facilities continue to provide exceptional levels of service to the nation's veterans regardless of integration status. However, shifts in campus programs and possible confusion regarding regular care patterns could create dissatisfaction among the patients and therefore justify testing for integration's effect on patients' perceived quality of care as compared to nonintegrating facilities.

Facility integration did not have significant positive or negative effect on patient-reported quality of care. Nonetheless, patients' ratings of timely access to care significantly improved between 1995 and 1997 for all facilities, most likely due to exceptional gains in increasing new access points for veterans. The VA's new access points initiative represents a proactive effort to transition from a direct delivery system to an integrated network of VA-operated hospitals and VA and non-VA outpatient providers. In so doing, VA has identified what could be a cost-effective way to enhance the availability of health care for current users, especially those residing in under-served areas. While establishing access points could result in a modest increase in accessibility and therefore translate into satisfaction improvement scores on the survey, they may not generate enough savings to offset the elevated costs associated with caring for increased numbers of veterans attracted to the new clinics (GAO reference).

Second, patients' perception of the coordination of their care was tested with the expectation that integration would cause a short term upset to regular patterns of care and would result in less satisfaction. It was found that there was virtually no difference in patients' rating of coordination of care over the study period and also no difference between integrated and nonintegrated facilities' scores. Because the ultimate objective of facility integration is to provide a seamless operation of multiple services at multiple facilities, it can only be hoped that the VHA integration initiative results in this stated goal. However, the short time frame may be contributing to the lack of results as the new systems reconcile their services and make organizational changes toward improved care coordination.

The VHA has been making improvements through programs aimed at increasing access, re-organizing and rationalizing service lines, and placing care in the appropriate setting. These initiatives are most likely having more of an impact on patient satisfaction than facility-wide integration and the creation of healthcare systems. The absolute scores for patient reported problems with care coordination are substantially higher than patient reported problems with access to care in both 1995 and 1997, indicating there is definite room for improving coordination. Integrated facilities' average coordination score remained relatively constant. Upon further examination, approximately half the integrated systems improved while the scores for about half worsened. The nonintegrated group had more of a tendency toward improved scores for a greater number of VAMCs. This variation supports the hypothesis that integration would cause a fair amount of disruption in the early stages that would trickle down to patient-level awareness and, in the short run, may adversely affect selected integrated systems.

Facility Integration and the Resulting Organization

The findings from this study, combined with the original MDRC/Sepulveda study results, suggest three broad organizational issues that should be considered when planning and implementing facility integration. These three issues concern decisions that need to be made when delineating policy for merger and post-acquisition activity. They are:

1. *Type of Integration.* The desired degree of organizational integration will not only shape the new structure, but also the extent to which the merger will affect employees. Often, the primary problem in effectively managing merged firms is integrating staff into a single unit and having all parties accept this new structure (Gall, 1991).
2. *Structure or Form of Future Relationship.* A partnership of equals versus a dominant relationship will have different process and outcomes. If one organization dominates, its processes will likely be applied to the other but elements of the acquired facility may be worth retaining. If the merger is between equals, the best features of both will most likely be retained, resulting in change for both organizations and requiring special care in avoiding increased expenses rather than eliminating duplication.
3. *Cultural Integration.* Significant cultural differences are to be expected, even in a merger of equals. Facilities undergoing integration must recognize that culture is a critical aspect, especially in people-intensive industries like healthcare delivery.

Type of Facility Integration

The original MDRC/Sepulveda study extensively detailed the type of facility integration each new VA healthcare system created and the processes that categorized the integration. They determined there was no single path for integration or the related processes, but that administrative and clinical functions ultimately needed to come together to improve patient care. A possible attempt to reframe the argument for integration may be that the benefits accrue not so much from mandating integration and therefore expecting results from the initial combination of assets, but instead reaping the rewards from the goals of eliminating duplicity and improving coordination

that, once met, will produce results more subtly over the long run. Some studies have shown that a variety of paths with longer-term, more flexible goals in mind can result in success.

Bazzoli et al (1996) found that thriving health networks and systems typically engaged in both ownership and contractual-based styles of integration or they had no integration at all. The adoption of hybrid integration strategies is consistent with the observations of others and may reflect a diversification in strategy to adapt to environmental contingencies and uncertainties. The VA would benefit from allowing each new system to adopt processes and a type of integration that allows for the character of the partner facilities and local environment to flourish, or allowing them not to integrate at all.

Nauenberg et al (1999) found that more complex network structures were associated with lower rates of growth in operating margins, which was possibly caused by greater increases in operating expenses per patient day. This is consistent with this study's multivariate analyses that found increased service complexity and size contributed to higher costs per bed day of care and lower clinical staffing ratios between integrated and nonintegrated VHA facilities. It may not be the process of integration causes greater operating expense, but if the organization becomes too unwieldy, efficiency gains may not be realized.

Perhaps a better way to view integration is along a spectrum of collaborative options, provided goals are met by milestone dates approved by regional VISNs. For example, to facilitate collaboration and improve relations between partner organizations, the leaders of a catholic hospital system in St. Louis developed six relationship models in which two main types of collaborative arrangements are possible

– informal and formal. Informal cooperative relationships include a consultation model and participation by non-system entities in established system activities. Formal collaborative relationships include joint ventures at the operating entities level and in contract management, joint ventures at the governance-management level, and total affiliation (merger acquisition) (Capozzalo, 1991). This approach would offer much greater flexibility for the VHA in forging arrangements with the private market in addition to existing VA facilities – potentially retaining control of veterans' care while better using existing local capacity.

Structure and Form of Facility Integration

In this study, various structural characteristics or market environments more often seemed to predict differences in rates of change than facility integration. For instance, greater reductions in bed size and average length of stay were more predictive of increased costs per bed day of care. In addition, VA facilities located in the Eastern U.S. more often were associated with increased staff turnover than other geographic locations. Facility characteristics may simply be detecting pre-integration differences and are better used as controls than as explanatory variables over time. For instance, Nauenberg et al (1999) found that time invariant variables such as teaching status and rural-urban location were not significant predictors once the study period was over two years. This makes the argument that a longer time period may result in detecting greater integration effects on effectiveness and quality, rather than the model simply picking up differences among structural and market characteristics.

Because the VHA is a national system of medical facilities, with regional management and a single headquarters, it has an advantage over the seemingly

haphazard approach of the private healthcare market when overseeing planning and rationalizing care for its patients, the nation's veterans. Bogue et al (1995) outlined two general strategies for merger in the private market that result in restructuring other than for efficiency gains: the elimination of direct acute competitors or the expansion of acute care networks. Because the VA cannot overtly participate in a strategy to eliminate competitors, improving quality and using recovered funds from improved efficiency to provide funding for new access points may be some of the best arguments for the VA's major integration initiative.

Healthcare mergers frequently served to convert acute, inpatient capacity to other functions, with less than half of acquired hospitals continuing acute services after merger. Therefore, mergers may offer an expeditious way to locally restructure health services. This creates a situation where integration partners are chosen and the dominant structure is prescribed often simply due to geographical proximity. For instance, the Health Systems Integration Study found that the ability to coordinate and integrate functions, the physicians, and clinical services is greatly enhanced when systems' operating units are in geographic proximity to each other (Shortell et al, 1993b). This intuitively supports the strategy of local VA facilities joining together, both for operational integration and continued ease of access for the veterans, despite a lack of significant short-term gains.

Ultimately, successful post-acquisition integration effects are bound by integration objectives and the dominance of one firm over another. A study by Ingham et al (1992) found that impediments associated with the integration of operations could result in the acquiring firm being unable to manage the integration of the target firm effectively, or two equal firms unable to mesh operations and culture smoothly. The

larger the organization, the greater the need for integration, but the more diverse and intensive integration problems tend to be. The tendency may be to react when problems are encountered rather than plan every step.

If the major problem facing the acquiring organization is integrating the new asset into the organization in order to minimize loss of control, then acquisitions which are small relative to the size of the acquiring firm may be more easily and effectively instigated and integrated (Ingham et al, 1992). Conversely, others assert that when the acquired firm is small, the human needs of the acquired firm tend to get overlooked or trivialized by the more dominant organization. Alienation breeds its own source of discontent, which can prevent a merger from realizing both its cultural and its financial potential (Chatterjee et al, 1992).

Some VHA integrations have been more contentious than others due to the resulting dominance of one facility over another and the overwhelming loss of programs and staff to the primary facility (i.e., Central Alabama, Palo Alto). Special attention to the needs of these imbalanced VA integrations based on size or program dominance will be essential if they are to succeed and reap the rewards of shared services and coordination.

Rather than heading straight for organizational restructuring, some argue re-engineering is a more positive and constructive first step. Smith (1995) argued that healthcare organizations could simply do work smarter, rather than significantly adding new resources or increasing the number of programs provided to patients, to reap benefits in both operations and quality. In support, his study found that just by re-organizing staff into three interdisciplinary teams, both patient and staff satisfaction

increased by 20%, re-admissions decreased by 28%, length of visit decreased by 10% and continuity for a visit increased from 47% to 69%.

Ultimately, the transition from operating independently to functioning as a system is crucial for making horizontally, vertically, or virtually integrated firms a successful strategy en masse. The requirements for making a true integrated system or network will be realized when the incentives of the various parties are aligned, and the structural "ownership" does not overcome the ability of persons and organizations that are part of the greater system from resisting or keeping the organization from functioning smoothly.

After the Merger: Integrating the People

Few researchers have examined the problems of integrating staff after the operational merger has been consummated, and the impact a potential lack of true integration has on performance. It has been estimated that almost half to two thirds of all business mergers simply don't work. Possibly, one third of all merger failures are caused by faulty post-acquisition integration - resulting in one out of every three acquisitions being divested (Shrivastava, 1986). Post-merger activities are often treated as sort of a salvage operation to recover something from impossible promises and ill-considered goals (Economist, 1999a). However, companies that agree on a clear strategy, management structure, and staff communication before they formalize the deal stand a better chance at success. The business literature has shown that mergers are more likely to work when a company chooses a partner that fits well operationally and culturally, rather than one that is merely available (Economist, 1999a).

The usual order of integration events is to formulate a singular vision and

mission, then proceed with the physical integration of services and assets, and conclude with the a single set of policies and procedures. This general sequence of events is true for most industries and companies therein, and is similar to the order of events for VHA facility integrations. The early VHA facility integrations started with headquarters' or sometimes the facility directors' vision, and progressed through clear administrative integration to varying degrees of structural and operational integration. Because this study looked at the impact in the first 1-2 years post-integration, only about half of the integrated systems had undergone some form of clinical service integration while none had yet started integrating culturally. Despite the monumental effort it took to conduct the administrative and structural changes, most systems did not formally created a successful program for integrating culturally. This has resulted in many employees still harboring past loyalties to their individual VAMCs rather than the new VA integrated system.

Expectancy theories of motivation argue that success expectations reflect the judgments an individual makes concerning the extent to which his or her effort on the job will lead to desired levels of performance. The stronger the link between effort and performance, the more likely it is that an individual will be highly motivated on the job (Shanley & Correa, 1992). However, these authors found that an emphasis on agreement during integration activities may be counterproductive to long-term success. But is it possible to accept this cultural discord while merging facilities structurally and operationally?

Culture

Similar to research examining merging firms strategic fit and financial performance, Chatterjee et al (1992) proposed a theory that a system must develop a supportive organizational "culture", reinforced by communication processes, incentives, if they are to build a framework for responsibility and accountability. The key aim of such a culture is to promote the effectiveness, efficiency, and long-run return on capital of the delivery system as a whole, rather than only individual units making up that system. But culture is not easily modified; its full potency can be seen when two autonomous cultures are brought into close contact with each other, as typically happens when two firms merge. An argument could be made that merging cultures occurs at the onset and continues through to the end of any facility merger, consolidation, or integration.

Poor cultural fit has been the nemesis of many related mergers that appeared to make good strategic sense. The strategy underlying a merger determines the extent to which the dominant cultures of two firms come into contact. Attribution theory suggests that post-merger performance may influence the reliability of self-reported perceptions of cultural differences. Performance failure may amplify a 'we-they' orientation, even if initial differences were slight. The employees of the acquired firm are usually more likely to be expected to conform to the culture of the buyer. The impact of merger and integration is most felt organizations "absorbed" rather than those that remain fairly autonomous (Chatterjee et al, 1992).

The VA faces unique challenges when merging and nurturing culture among its newly integrated facilities. The existing umbrella under which all VAMCs operate has

contributed to a common culture that benefits the transition and acceptance of a shift to integrated systems, but these new combined systems cannot overlook local facilities' specific attributes and style. For both dominant-type and equal typed integrated systems, consolidating some of the departments during operational integration resulted in large amounts of the workload and staff being shifted to a different facility. This requires a tremendous adjustment to different policies, locations, medical school affiliations, work protocols, and management relationships to be accepted in an often random or incremental time frame for many VHA staff and patients.

When Stanford and the University of CA, San Francisco decided to merge in 1997, they faced intense opposition from the school's faculty. The system was facing massive losses and faculty members remained bitterly opposed to the deal. They had to locate the headquarters half way between the two and leasing new executive space - adding overhead and requiring managers to shuttle between the three places. Extra staff were hired to facilitate the transition (1,000 new hires and 700 shifted employees) and they liberally inflated people's titles in the interest of uniformity. Even after bringing in a turn-around firm to engineer drastic administrative staffing cuts, clinical programs were never integrated. Eventually, rivalries proved too destructive and the merger fell apart (Lagnado, 1999).

The Central Alabama Healthcare System provides an example of the struggles managerially and culturally occurring while facilities integrate. Although the integration planning included unifying management, consolidating clinical services, centralizing administrative services and possibly reengineering some support services, the two facilities were locked in conflict regarding the probable impact these changes would have on staff, patients, and the community. Even though planning activities involved

local facility employees, the decisions were made on a service-by-service basis and at varying times throughout the process, not allowing for system-wide rationalization of plans and implementation (GAO/HEHS 97-191, 1997). Some stakeholders (including the region's Congressional representatives) found it difficult, if not impossible, to assess the reasonableness of the VA's decisions and to ultimately "buy in" to them without the benefit of information from completed planning activities.

In making structural, operational, and cultural changes, the success of mergers will depend more than ever on the merged companies' ability to create added value, rather than just a shuffling of assets for re-organization purposes alone. And that will depend mainly on what happens after the deal has been done. Look behind any disastrous deal – the same problem keeps popping up: culture (Economist, 1999b). Culture permeates a company, and differences can poison any collaboration. Properly integrating all the crucial components of a system - its vision, strategic priorities, and performance - can actually assist in changing the culture within the environment (Page, 1999).

Management

Taking the first step toward creating successful cultural integration may start with executive management. Hospitals have had multiple goals and objectives that have changed over time – and each new purpose demands a different management approach (Marmor & Mashaw, 1993). The work of senior managers changes when the shift to more organizational integration in the healthcare industry makes them responsible for coordinated continuation of services, accountable for the overall health

status of the populations they serve, and involved in more complex organizational structures.

Datta (1991) found that compatibility of management styles is important to superior performance in acquisitions characterized by both high and low levels of post-acquisition integration of operations. Acquisitions of firms with a different management style can result in conflicts, difficulties in achieving operational synergies, market share shrinkages, and poor performance. Problems are further aggravated by differences in managerial styles and ongoing tensions concerning which style will dominate. To show intolerance for the acquired managers' culture is to threaten the cooperation and commitment of the very group who may be instrumental in determining the merger's ultimate success. Differences in executive management and clinical management styles have a negative impact on acquisition performance even in acquisitions characterized by low post-acquisition integration Chatterjee et al, 1992).

Because of the potential for tremendous change and loss, mergers are intrinsically stressful. The management teams who have made decisions and guided the company in the past may now feel powerless and out of control. Approximately 75% of the executives of acquired companies are gone in 5 years (Siehl et al, 1990). Top management staying or leaving is, in part, a function of the merger strategy used by the dominant organization. However, high-level managers need to assess a variety of factors and their potential for assimilation into the new organization if they want to remain. Deciding whether to stay or go becomes an issue of job fit, cultural fit, their tolerance for lack of control, the need for ego massage, and a clear career path (Siehl et al, 1990). Often, the thorniest part of a merger/consolidation in healthcare is figuring

out which of two clinical department chiefs is going to get the top job - and often the other leaves in the wake of the decision (Lagnado, 1999).

The VA's reconciling duplicative service chiefs was and continues to be quite a challenge for integrating facilities. In managing a department with staff in multiple locations, often many miles apart, chiefs needed to balance the need for communication and interaction with staff in all locations with the strains to physically traveling back and forth. The interactions in early phases of integration were often complicated as new relationships were working out. After operation integration, the staff at the campus where the chief was not based usually did not know the chief well and often found him/her inaccessible; staff at the campus where the chief was based – where frequently he or she was the chief prior to integration – also sometimes found the chief inaccessible because he or she was splitting time between both campuses and often system wide responsibilities (VanDeusen Lukas et al, 1998). Across the 13 systems included from this study in the original MDRC/Sepulveda survey, it was found that less than one-third of the service chiefs spent ten hours a week or more at each campus. In addition, clinical chiefs were much less likely than administrative chiefs to spend time regularly at each campus.

Promoting sound management processes during implementation activities with all staff are necessary to establish a good working example. Since integration is often characterized by conflict, strong leadership should be put in charge, full-time, to improve the chance of making integration work. This is more essential than ever when merger creates possible weaknesses in existing managerial structures. Shrivastava (1986) states that it is advisable to "seed" integration by making those managers who

will be responsible for running the acquired business participate in acquisition analysis and decision-making.

Communication

The uncertainty of merger creates stress for employees but cannot be easily avoided since many of the changes associated with mergers and acquisitions are evolutionary, and final outcomes are often not known during negotiations. For example, Schweiger & Denisi, (1991) studied members of a merged organization and found mergers to have a negative impact. Uncertainty appeared to increase, and with that increase there was a rise in stress and a decrease in satisfaction, commitment, intentions to remain with an organization, and perceptions of the organization's trustworthiness, honesty, and caring. The survey results also suggest that realistic communication during a merger process in the form of a realistic merger preview can help employees get through the process.

Integrated VA systems approached their communication strategies differently, usually combining several modes to accomplish similar goals. Categories of communication tested in the MDRC/Sepulveda survey included town hall meetings, follow-up supervisor meetings, e-mail communications, and internal newsletters. Some new systems reported high levels of communication across all categories (e.g., Puget Sound, Black Hills), while others traded off between personal and mass communication modes (e.g., Central Texas, Pittsburgh, New Jersey) (VanDeusen Lukas, 1998). Geographic distance influenced face-to-face communication patterns, but the survey did not discover evidence that any one combination of strategies proved more effective than others.

When communication within the VA was held back with the intention of preventing disruptive rumors or tightly controlling work group plans, staff usually complained of alienation and increased difficulty in performing their daily and integration duties (VanDeusen Lukas, 1998). Sam Weill, CEO of Citigroup and longtime merger expert, says the key to making mergers work is to make decisions faster and more direct than you normally would to keep the good people; treat the other organization and its people with respect; encourage employee ownership through financial incentives; and create a family feeling by communicating intentions with spouses and the community (Murray & Beckett, 1999).

People's perception of communication says a lot about their reaction to their environment. Communication is often used as a scapegoat instead of addressing the real problems, and unfortunately it is often easier to accept superficial complaints instead of looking further at what the real issues may be. A recent study of relatively senior nurse managers by Young (1995) found that staff who voiced concerns over job uncertainty, staff exhaustion, and difficulties in communication after a merger considered informal face-to-face communication to be the most effective, as well as the most liked method of communication, followed by the telephone and small team or project meetings. Least liked and effective were notices, reports, and internal newsletters – worth noting as these are widely used within the VA. The author interpreted the unrest also as stark evidence that the staff felt de-motivated and undervalued once one culture became dominant, and morale within the dominated section suffered.

Morale and integration results for organized delivery systems vary depending on who is asked within the firm (Shortell et al, 1993b). Corporate management believes

the system is more integrated when corporate staff exerts more control; operating units believe the system is more integrated when they have more control. However, the greater the degree to which the various functions and activities are perceived to be coordinated across operating units, the more effectively these functions are perceived to be performed and the overall system is perceived to be more effective.

The MDRC/Sepulveda study explicitly noted that staff at many integration sites attributed a variety of adverse events and changes to integration when, in fact, they stemmed from other, unrelated trends such as budget or mandated staffing reductions. It is tempting to attribute the adverse events to integration, and similarly, it is appealing to look for positive operational and budget effects caused by integration– when unrelated trends or factors might actually be the cause. The July 1998 report recommended that managers help staff distinguish and clearly communicate the difference between the costs and benefits of integration and the effects of other simultaneous changes if integration is to be successful.

Outside Evaluation and Discussion of VHA Facility Integration

There are two remarkable anomalies when comparing the VA facility integration initiative to the private sector. First, mergers in the private sector are usually about strategic growth or diversification, while in the VA they concern reduction in size. Second, while the enthusiasm of commercial companies for merging has faltered as the expected benefits have failed to materialize, the VA is pushing hard for integration as a solution for operational and quality improvement.

In a study published in 1999, the GAO recognized that the current 23 facility integrations, involving 48 health care facilities, were designed to produce millions of

dollars in savings through reduced duplication of services that could be used to enhance veterans' care (GAO/OCG 99-15, 1999). The GAO recognized that facility integrations had been described as the way to enhance the efficiency and effectiveness of VA's health care delivery system by reducing unnecessary duplication of services, yet they made a point that little had been accomplished to actually close facilities.

In a harsh evaluation of the VA's facility integration and consolidation initiative in this same report, the GAO determined that the VA's planning and implementation efforts for the integrations had been inadequate (GAO/OCG 99-15, 1999). The GAO outlined the following problems with the strategic initiative's course as of 1999.

First, in planning integrations, the VA generally did not conduct comprehensive evaluations thoroughly assessing all potential resources needed to meet the expected workload in a given location over the next 5 to 10 years. As a result, VA has spent hundreds of millions over the last decade constructing and renovating inpatient capacity that is no longer needed. The VA's current integration initiative to coordinate various clinical and support operations across some of its facilities continues to make an argument that some facilities cannot meet the current and future plans without extensive renovations.

A 1998 GAO study found that reducing VA medical centers in Chicago from four to three locations could decrease VHA expenditures an estimated $200 million over the next ten years. Instead of facility integration, which would coordinate or integrate programs, facility closure would eliminate them and thereby lower VA operating and maintenance costs without any predicted adverse change in the Chicago-area's mission or patient base (GAO/HEHS 98-64, 1998). The GAO made a strong argument

for reducing multiple campuses to a single site, where possible, rather than integrating yet continuing to operate multiple sites. The study predicted that consolidating services and closing a facility in Chicago could save from $6 - $27 million in future renovation costs (GAO/HEHS 98-64).

Second, the VA has implemented some changes before completing the planning phases and providing detailed integration plans to stakeholders. Transforming the VA's health care delivery system from an inpatient to an outpatient focus, increasing reliance on primary care, and integrating services in fewer hospitals are all causing the VA and medical schools to rethink their affiliation arrangements. The VA's restructuring efforts, particularly integrating administrative and clinical services across two or more medical centers, complicate affiliation agreements with medical schools and agreements with federal agencies regarding the VA's role in national emergencies. About 70% of all physicians employed by the VHA hold faculty appointments at medical schools. In addition, over 100,000 health professionals from more than 1,000 educational institutions receive clinical experience in VA medical centers each year. In FY1999, the VHA expected to spend $750 million for education and training of health professionals alone (GAO/HEHS 98-32, 1998).

Third, the VA has not used independent planners – that is, planners without vested interests in the geographic area. Consequently, the VA has encountered opposition from stakeholders such as veterans, facility personnel, affiliated medical school personnel, and members of the Congress who represent these groups when it proposed facility integrations.

Again using Chicago as an example, the area has had particular problems with the department's new vision as the agency moved to consolidate the management of

some of the medical facilities in the same geographic area. There are 4 large VA medical centers in the Chicago area, 2 of which (West Side-University of IL, Lakeside-Northwestern) are only 6 miles apart. University of IL launched a full-scale attack on the integration plan as the school feared that the VHA's real goal was to close the medical and surgical services at West Side VA Medical Center and move veterans in need of such care to Lakeside. West Side would be subsequently turned into an ambulatory care facility and, therefore, University of IL would lose its inpatient teaching facility. Despite the promise and possibility of dramatic reductions in duplicative programs, the contentions between management and medical staffs resulted in all the clinical services (medicine, surgery, and psychiatry) remaining unchanged, and full service conintued to be provided at both hospitals using the same management structure and operating procedures (GAO/HEHS 98-118, 1998). Bitter fighting like this has raised numerous concerns about potential integrations – it seems inevitable that more than one medical school will need to share inpatient medical and research opportunities at a single VHA facility (Iglehart, 1996; GAO/HEHS 98-64).

On a more positive note, the GAO concluded that FY1999 savings had been achieved by integrating management teams of two or more large medical facilities in 24 markets, involving a total of 50 medical centers (GAO/T-HEHS 99-109, 1999). But this study still argued that the VA has an opportunity to achieve even more significant savings than initial integration is providing by dramatically consolidating duplicate or underused services, closing unneeded hospitals, and restructuring capital assets. For example, the GAO claims the VA still operates 17 large medical facilities that compete with newly integrated facilities in 10 of the markets, as well as operating 44 large facilities in 19 other markets that compete with each other to serve veterans.

The GAO concludes that the VA has made progress in developing a framework for managing and evaluating changes in healthcare service delivery; however, much more needs to be done. In its restructuring, the VA must ensure that it meets its educational and medical missions without compromising efforts to improve efficiency and effectiveness (GAO 01-255).

Chapter 8: Conclusions and Limitations

Conclusions

Presently, there is little empirical evidence to support the promised benefits of formal structural integration in either the business or healthcare literature (Walston et al, 1996; Trautwein, 1990; Shortell, 1988). Arguments from the public and private sectors have been made that providers can better meet the demand for reasonably priced, high quality services through larger networks that consolidate and eliminate duplicative capacity, coordinate complimentary services, and bear risk. However, the volume and variety of consolidations occurring across all segments of the health care sector clearly indicate an industry that is in flux, with ongoing experimentation to find the optimal structure and scale. While many regional multi-hospital systems have managed to get ownership consolidated, they have become captive to the status quo and have not achieved the economies anticipated by the theorists (Brown, 1996). A key issue when speculating about undertaking full merger is the question of whether or not it is driven by a new age of efficient care versus simply an additional organizational initiative without proven results.

This dissertation found that facility integration, in the short term, did not exert any significant influence on measures of operational effectiveness and perceived quality. Despite VA headquarters' original goals promising substantially reduced administrative expenses, new economies of scale, and improved service levels, neither short term gains nor problems were associated with integration. Specifically, between 1993 and 1997:

1. Short-term facility integration did not have result in a slower growth rate for costs per bed day of care.
2. Integrated facilities did not significantly redirect administrative resources to direct patient care.
3. Short-term facility integration was not associated with an increase in direct staff turnover.
4. Facility integration was not a significant predictor of changes in patient-reported problems with timely access to care.
5. Short-term integration was not associated with an increase or decrease in patient-reported problems with coordination of care.

While facility integration was not related to the hypothesized outcomes, certain facility characteristics or market conditions were significant. Substantial structural and operational changes occurring among all VA medical centers since the mid-1990s have resulted in dramatic drops in number of beds and average length of stay, but increased outpatient visits. These three trends were significantly associated with increased costs per bed day of care, most likely due to inpatient costs being spread over fewer inpatient service units (bed days of care). Although the analysis controlled for a facility's service complexity, a measure for patient-level case mix in the model would have helped to determine if veterans continuing to receive service as inpatients were consequently more seriously ill and therefore incurring greater costs than those who could be transferred on an outpatient setting.

The proportion of clinical staff to administrative staff was reduced on average for all facilities. As a possible explanation, the shift to outpatient care was significantly associated with reductions in clinical to administrative staff for all VA hospitals. This might have been due to a combination of shifting clinical staff to outpatient care and reducing the clinical intensity of the staff, while not as greatly reducing the number of administrative employees in total.

The substantial efforts to reduce inpatient beds and increase outpatient visits were significantly associated with customers' perceived quality as well. Patients receiving care in VAMCs with lower rates of inpatient bed reductions were less likely to report problems with access. Similarly, veterans reported more problems with care coordination if outpatient visits drastically increased. These findings suggest that an upset to veterans' regular pattern of care, the traditional inpatient model, causes an increase in reported dissatisfaction.

The finding of limited integration effects must be qualified because of the fundamental changes taking place within the VA as a whole. Facility integration, as an independent organizational strategy, may not appear to result in significant improvements as tested in this dissertation because other initiatives already underway for improving care delivery at all VA medical centers are having a much greater impact than facility integration. These structural and operational changes have greatly reduced inpatient capacity and increased outpatient care.

In the last 5 years, the VHA has greatly improved its efficiency of scale and has reaped substantial cost savings. However, consolidation or integration does not necessarily mean that the VHA should reduce scope. The VHA has a proven record at providing cost-effective, unique veteran care and services that the private market is either less capable or ill-equipped to offer. The collection of strategies in place, not any one in particular, are allowing the VHA to continue to meet its distinctive mission while eliminating excess capacity and improving operations.

"Prescriptions for Change" (Kizer, 1996), and the "Guidebook for VHA Medical Facility Integration" (Kizer, 1998), include the goals for facility integration, based on the previous Under Secretary of Health's vision and, subsequently, on lessons learned

from previous integrations. The VHA maintains a long-term commitment to continuing the integration of VAMCs while learning from the early integrated systems now with five or six years experience.

Realigning the VA's infrastructure to achieve efficiencies and effectively meet veterans' current and future needs – while mitigating the potential negative effects on staffing, communities, and other VA missions – will require skilled capital asset management. VA's realignment decisions have largely been made ad hoc and based on subjective criteria with proactive senior management involvement (GAO 01-255, 2001). In addition, realignment decisions have often met with public opposition and concerns of medical schools affiliated with VA facilities. As a result, the VA's decision about how to realign its assets – especially those aimed at consolidating administrative and clinical services across two or more nearly medical centers – have often been complicated and therefore delayed or not fully implemented.

Integration is a tool, not an outcome. It creates organizations in which more activities and resources are under one set of controls and creates circumstances under which activities that were previously carried out by many groups with differing motives, values, and incentives can be more closely coordinated (Coddington et al, 1996). It is commendable to enthusiastically embark on a strategy promising to improve efficiency and quality of care in a department and within a delivery system that could gain from the hypothesized benefits. But in the short run, achieving facility integration does not seem to be creating benefits different from the dramatic efforts underway at all VA medical centers.

Project Limitations and Considerations for Future Research

Creating an evaluation study design at the organizational level and using a national database for the analysis was a major challenge. However, by using first-hand observations of the VHA medical centers and a well-metered use of deduction from theory, it was possible to compare what is actually happening versus what might be expected at VA medical centers. If operational and administrative consolidation were accepted as a primary motivation for these integrations, we would expect to see some initial changes in operating practices in those institutions involved in consolidation or merger. It is precisely through this exploration of limitations that the determination can be made as to whether the rhetoric of the early beneficial effects of facility integration actually prove defensible and can be used for administrative decision-making and national healthcare policy.

The lack of integration effects in this study should be considered cautiously because of the limited number of early facility integrations included in the analysis. Selection bias might be a concern simply because it is difficult to assess whether those early facilities that opted for becoming integrated systems had already undergone some preparation for integration that stand alone facilities did not. This could result in the apparent lack of effects of integration on operational effectiveness and perceived quality. However, an analysis of mean pre-integration performance levels did not show any statistically significant differences between hospitals integrating and those not. Another possible measurement bias may have resulted because we needed to combine characteristics of merging organizations and assign them single values for the pretest data. This may have resulted in some imprecise measures of where the

systems were located, the complexities of services provided, and medical school affiliation.

The problem of establishing an intervention's impact is identical to the problem of establishing that the intervention is a cause of some specified effect. Hence, establishing impact essentially amounts to establishing causality (Rossi & Freeman, 1993). In social and business research, however, many outcomes have more than one cause and are mediated by an infinite number of extraneous confounding factors. To study patient outcomes as related to structural change, a list of mediating patient-level variables would need to be studied (i.e., predictors of health status) and this would fundamentally change the unit of analysis of this research project. With time, it would be quite interesting and important to determine whether the health of the patient can be linked to the way the particular structure of the care is delivered, but that would require a longitudinal study with greater resources.

When studies of integration have addressed performance and effectiveness issues, they have usually focused on the year following an acquisition. During this time, it is difficult to measure performance since objectives are unclear and comparisons groups are often insufficient. In their study of merged hospitals' financials from 1980-1985, Mullner and Andersen (1987) found that no clear financial gains or losses characterized merging or consolidating hospitals either before or after merger or consolidation, possibly due to the short time period of study. They used data 2 years pre-integration and 2 years post-integration, allowing for comparisons cross sectionally and over time. A longer study period might result in significant integration effects on the dependent variables once the integrations mature.

There are a number of VA-specific issues regarding the study of integration as well. A variable measuring access was not used in this study. VA researchers sometimes measure access as an increase in "access points" (community clinics). Since most VA facilities are funding and opening new access points regardless of integration status, and because this strategy was encouraged before facility integrations took place, access is not relevant here for measuring changes in operations or patient satisfaction at the facility level. In addition, not all medical centers view an increase in access as part of the integration's goals and intent. In other words, this construct is only valuable to measure if people set out to achieve it in the first place. Another VA initiative that makes integration difficult to study is the simultaneous strategy at the regional level to integrate service lines, irrespective of full organizational or facility integrations. This has greatly confused many participants and stakeholders since both strategies may be affecting a different but overlapping set of goals, and the subsequent processes to achieve results within either the facility or service line integration often overlap.

It is difficult to implement and measure any wide-scale organizational change. Political interests, status quo, information sharing and power structures are just some of the less tangible obstacles expected in trying to implement a facility integration. These will undoubtedly affect the time period required to assess integration effects. Because of the relatively short time frame since the integrations have been implemented, the effects of integration may not be fully realized.

Appendix 1

Wilcoxon Sign Rank and Mann-Whitney Rank Sum Tests for Normal and Equal Distribution Continuous Control Variables

	Wilcoxon sign rank median shifted ...			Wilcoxon (Mann-Whitney) Two-sample rank sum Ho: equally distributed	
Continuous Control Variables	Positively	Negatively	p <	z (n=141)	p
Beds	0	141	0.001	-2.144	0.05
Integrated	0	14	0.001		
Nonintegrated	0	127	0.001		
ALOS	22	119	0.01	0.228	n.s.
Integrated	3	11	0.15		
Nonintegrated	19	108	0.001		
Outpatient visits	139	2	0.001	0.09	n.s.
Integrated	14	0	0.001		
Nonintegrated	125	2	0.001		
RN FTE as a % of total	88	53	0.01	-0.028	n.s.
Integrated	8	6	n.s.		
Nonintegrated	80	47	0.01		

Appendix 2

Means and Standard Deviations for Continuous Study Variables

	Pre-Integration Levels (1993)						Post-Integration Levels (1997)						Change (FY1993-1997)					
	Total		To be Integrated		Non-Integrating		Total		Integrated		Non-Integrating		Total		Integrated		Non-Integrated	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Dependent Variables																		
"Operating Effectiveness"																		
1 Cost per BDOC	515.3	165.3	442.4	101.3	523.4	169.3	918.2	350.2	772.6	248.3	934.2	356.8	40.6%	15.1%	39.6%	13.2%	40.7%	15.3%
Clinical Costs	*38745*	*25361*	*71493*	*26646*	*35135*	*22564*	*35804*	*25120*	*66322*	*23638*	*32440*	*22991*	*-11.2%*	*15.7%*	*-6.7%*	*12.2%*	*-11.7%*	*16.0%*
Support Costs	*7503*	*4848*	*14485*	*5520*	*6733*	*4118*	*7170*	*4947*	*13958*	*5843*	*6422*	*4242*	*-4.0%*	*28.2%*	*-2.3%*	*21.2%*	*-4.2%*	*28.9%*
Administrative Costs	*5197*	*3050*	*9852*	*3240*	*4684*	*2565*	*6572*	*4277*	*12798*	*5447*	*5885*	*3533*	*24.5%*	*26.8%*	*30.0%*	*33.0%*	*23.9%*	*26.1%*
Bed Days of Care	*107317*	*71599*	*222848*	*86025*	*94582*	*57324*	*61776*	*46018*	*132973*	*59367*	*53927*	*36932*	*-44.8%*	*15.0%*	*-41.0%*	*14.5%*	*-45.2%*	*15.1%*
2 Clinical:Admin Staff Ratio	5.7	1.3	6.1	1.3	5.7	1.3	5.1	1.6	5.6	1.1	5.0	1.6	-10.3%	21.9%	-4.7%	27.1%	-10.9%	21.3%
Clinical FTEs	*627.4*	*388.6*	*1187.6*	*339.2*	*565.7*	*35.6*	*476.9*	*317.8*	*901.1*	*287.9*	*430.1*	*285.4*	*-26.7%*	*13.3%*	*-23.8%*	*9.7%*	*-27.0%*	*13.6%*
Administrative FTEs	*105.6*	*56.7*	*195.6*	*56.3*	*95.7*	*47.4*	*89.1*	*49.9*	*160.7*	*47.5*	*81.2*	*43.6*	*15.8%*	*16.7%*	*-15.9%*	*18.8%*	*-15.7%*	*16.6%*
3 Direct Staff Turnover	10.8	4.1	11.9	1.7	10.7	4.3	8.5	2.8	8.6	2.3	8.5	2.8	-14.7%	32.4%	-26.1%	21.8%	-13.5%	33.2%
"Perceived Quality" *																		
4 Timely Access Problems	0.252	0.06	0.255	0.05	0.252	0.06	0.145	0.03	0.152	0.03	0.145	0.03	-41.0%	13.7%	-40.0%	7.7%	-41.1%	14.2%
5 Care Coordination Problems	0.36	0.06	0.369	0.06	0.359	0.06	0.353	0.04	0.365	0.06	0.351	0.04	-1.5%	16.1%	-0.1%	12.9%	-1.7%	16.5%
Control Variables																		
Market Characteristics																		
HMO penetration (1996)							17.4%	13.1%	20.1%	12.1%	17.1%	13.2%						
Structural Characteristics																		
** Beds	381.3	247.3	783.6	291.7	336.9	198.1	220.2	170.5	503.6	231.1	189.0	129.0	-45.4%	15.9%	-37.2%	16.9%	-46.3%	15.6%
ALOS	20.2	18.3	23.4	9.0	19.9	19.1	18.1	21.0	21.4	16.5	17.8	21.5	-15.8%	26.9%	-12.3%	40.0%	-16.2%	25.2%
Outpatient Visits	157261	99804	268169	104073	145034	91830	203496	119104	348333	117901	187530	108352	34.7%	19.4%	32.5%	12.3%	34.9%	20.1%
** RN FTE as percent of Total	22.8%	3.9%	21.2%	4.4%	23.0%	3.8%	23.5%	4.2%	22.6%	3.7%	23.6%	4.2%	3.7%	12.0%	9.0%	21.5%	3.1%	10.4%
RN FTEs	190.9	114.5	339.9	106.8	174.5	103.3	153.7	100.1	283.5	100.2	139.4	89.5	-22.2%	15.0%	-17.1%	14.1%	-22.8%	15.0%
Total FTEs	850.3	509.2	1606.5	514.5	766.9	436.2	658.5	421.8	1244.1	372.7	593.9	375.6	-24.8%	12.5%	-22.2%	8.8%	-25.1%	12.8%

* Patient report data compares 1995 & 1997 due to the unavailability of 1993 data.

** p<0.05

Appendix 3

Wilcoxon Sign Rank and Mann-Whitney Rank Sum Tests for Normal and Equal Distribution Dependent Variables with sub-variables

	Wilcoxon sign rank			Wilcoxon (Mann-Whitney) Two-sample rank sum	
	median shifted ...			Ho: equally distributed	
Dependent Variables	Positively	Negatively	p <	z (n=141)	p
DV 1: Cost per Bed Day of Care	140	1	0.001	0.552	n.s.
Integrated	14	0	0.001		
Nonintegrated	126	1	0.001		
Sub-Variables for Cost per BDOC					
Clinical Cost	*32*	*109*	*0.001*	*-0.786*	*n.s.*
Integrated	*4*	*10*	*0.1*		
Nonintegrated	*28*	*99*	*0.001*		
Administrative Cost	*123*	*18*	*0.001*	*-0.462*	*n.s.*
Integrated	*13*	*1*	*0.01*		
Nonintegrated	*110*	*17*	*0.001*		
Support Costs	*62*	*79*	*0.1*	*-0.228*	*n.s.*
Integrated	*7*	*7*	*n.s.*		
Nonintegrated	*55*	*72*	*0.1*		
Bed Days of Care	*0*	*141*	*0.001*	*-1.193*	*n.s.*
Integrated	*0*	*14*	*0.001*		
Nonintegrated	*0*	*127*	*0.001*		
DV 2: Clin:Administrative Staff Ratio	28	108	0.001	-1.062	n.s.
Integrated	4	10	0.1		
Nonintegrated	24	98	0.001		
Sub-Variables					
Clinical FTEs	*1*	*140*	*0.001*		
Integrated	*0*	*14*	*0.001*		
Nonintegrated	*1*	*126*	*0.001*		
Administrative FTEs	*19*	*118*	*0.001*		
Integrated	*2*	*12*	*0.01*		
Nonintegrated	*17*	*106*	*0.001*		
DV 3: Direct Staff Turnover	37	104	0.001	1.227	n.s.
Integrated	3	11	0.01		
Nonintegrated	34	93	0.001		
DV 4: Problems: timely access	1	139	0.001	-0.365	n.s.
Integrated	0	14	0.001		
Nonintegrated	1	125	0.001		
DV 5: Problems: care coordination	62	78	0.1	-0.317	n.s.
Integrated	7	7	n.s.		
Nonintegrated	55	71	0.1		

Appendix 4

Operational Variable Means: 1993-1997 Mean Rate of Change
Multivariate Comparisons: Structural and Market Characteristics by Dependent Variables

	Structural Characteristics			Market Characteristics					
	Academic	Service Mix, Size		Geographic Quadrant				Urban-Rural	
Dependent Variable	Affiliated	Secondary	Complex	East	Central	South	West	Metro	City
Operating Effectiveness									
1. Cost per Bed Day of Care									
Non-integrated	0.396	0.401	0.389	0.398	0.473	0.377	0.373	0.382	0.425
Integrated	0.408	0.387	0.457 **	0.404	0.381 *	0.374	0.446	0.387	0.35
2. Clinical:Administrative Staff Ratio									
Non-integrated	-0.094	-0.083	-0.072	-0.084	-0.180	-0.099	-0.056	-0.092	-0.079
Integrated	-0.054	0.01 *	-0.197 ****	-0.084	0.173 ****	-0.09	-0.197 **	-0.026 **	-0.029
3. Direct Staff Turnover									
Non-integrated	-0.127	-0.11	-0.242	-0.011	-0.104	-0.209	-0.237	-0.172	-0.145
Integrated	-0.233 **	-0.208 *	-0.291	-0.128	-0.386 ***	-0.325 *	-0.277	-0.193	-0.378 **
Perceived Quality									
1. Problems with Access to Care									
Non-integrated	-0.406	-0.426	-0.368	-0.432	-0.398	-0.425	-0.379	-0.391	-0.433
Integrated	-0.394	-0.368 **	-0.452 **	-0.409	-0.403	-0.379	-0.412	-0.422 *	-0.373
2. Problems with Coordination of Care									
Non-integrated	-0.023	-0.031	-0.005	-0.038	0.007	-0.036	0.009	-0.016	-0.026
Integrated	0.014	0.003	0.037	-0.097	-0.004	0.133 ***	-0.025	-0.017	-0.001

* p<=.20
** p<=.15
*** p<=.10
**** p<=.05

Appendix 5

Criteria for Potential Realignment (CPR) of VHA facilities and programs.

Before deciding that "realignment" of a facility or program is the best option, candidate realignment opportunities would need to be carefully evaluated for potential improved efficiency or improved quality and compared with alternative options. Once implemented, the realignment decision would need to be carefully evaluated for its effect on quality of care, cost effectiveness, accessibility to care and other relevant factors.

In considering any savings generated from any program or facility realignment, the goal should be the reduction of both fixed and variable costs. This would typically result from the elimination of a program or a production unit (decreased duplication) and the resulting reduction of staff, maintenance and other program support.

In considering these criteria and potential efficiency opportunities, managers are reminded of VA's unique policy objectives and special programs emphasis as well as the education and research mission.

1. Availability of the same kind of service(s) of equal or higher quality in the community at lower cost.
2. Availability of the same kind of service(s) of equal or higher quality at another VA facility within approximately sixty minutes average ground transport travel time.
3. Number of procedures performed or services delivered is below generally accepted community standards guidelines for productivity or proficiency.
4. Quality of care is less than that of available in the community or at other nearby VA facilities, as measured by mortality or morbidity rates or other appropriate performance or outcome indicators.
5. Projected demand for service(s) is significantly decreasing.
6. Disproportionate or unjustifiably high resource consumption (the annual average expenditure per patient being more than 150% of the national mean expenditure per for patient for similar facilities or clinical cohorts - and/or the ALOS being more than 150% of the national average LOS.)
7. Integration, consolidation or merger of duplicate or similarly intended services at

nearby VA facilities would yield significant administrative and/or staffing efficiencies. (see example of "Chicago").

8. Need for a clinical program presence can be reduced or eliminated by new technology or expanded automation.
9. A program is very high cost, benefits few veterans (particularly few service-connected veterans) and is not an intrinsically veteran-related service.
10. The same kind of service(s) of equal or higher quality and of equal as that provided at a VAMC may be purchased in the community and the community provider is more convenient for patients.

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