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Hospital viability is an area of critical concern to leaders, managers, and researchers throughout the world. This issue illustrates the current thinking and strategies regarding this topic.

Teri Fontenot’s financial expertise facilitated her rise a decade ago to president and chief executive officer of Woman’s Hospital, the largest independently owned women’s hospital in the United States. In the interview, she relays the decisions the hospital made to fulfill its mission and ensure its growth and independence.

This year, two new columns and columnists lead our readers through the trends and practices in healthcare management. In his first installment, Kaveh Safavi presents a framework for understanding pay-for-performance systems. Similarly, Andrew Garman, with coauthor Matthew Johnson, offers a definition of leadership competencies in his column.

The clinical nurse leader role is a relatively new concept in healthcare delivery. In the perspective, James Begun, Jolene Tornabeni, and Kenneth White describe how this “lateral integrator” role assumes accountability for the outcomes of a group of clients and can improve quality of care.

The articles in this issue address financial and clinical performance along several interrelated dimensions. Paul Kirby and colleagues explore changes in the services offered by California hospitals over an eight-year period. Their research reveals direct relationships between service closures and financial health. Research by Nir Menachemi and colleagues provides data for estimating the potential financial effects of investing in information technology (IT) in hospitals. They find that IT adoption may be related to improved financial outcomes.

Selected as one of the best of the year, the Fellow Project in this issue, written by Norman Andrews, describes a process for evaluating the effectiveness of the board of a community health system.

Beginning with this issue, the Journal goes online! ACHE affiliates who have selected the Journal as their membership benefit publication may now access features and articles electronically through the Books and Journals section of ache.org.

Kyle L. Grazier, Dr.P.H.
Editor

The Journal welcomes article submissions. For information on submitting an article, please visit www.ache.org/pubs/submisjo.cfm.
Interview with Teri G. Fontenot, CHE, president and chief executive officer, Woman’s Hospital

Since 1996, Teri Fontenot, CHE, has served as president and chief executive officer of Woman’s Hospital, a nonprofit women’s and infants’ hospital in Baton Rouge, Louisiana, and the largest independently owned women’s hospital in the country. Woman’s Hospital consistently achieves net margins that are considerably higher than national industry standards, allowing the organization to provide the highest-quality specialty care, services, and programs to women and infants in the region.

Previously, Ms. Fontenot served as chief financial officer at St. Francis Medical Center in Monroe, Louisiana; at Southwest Florida Regional Medical Center in Fort Myers, Florida; and at Opelousas General Hospital in Opelousas, Louisiana. She joined Woman’s Hospital in January 1992 as senior vice president, chief financial officer, and treasurer and was promoted to executive vice president and chief operating officer in 1994. Ms. Fontenot is very active in civic and professional organizations, both nationally and locally. These include the Federal Reserve Bank of Atlanta, the executive committee and board of the American Hospital Association, the National Institutes of Health’s Advisory Committee on Research on Women’s Health, the board of Hospital Billing and Collection Service Ltd., the Healthcare Research & Development Institute, and the executive committees and boards of the Baton Rouge Area Chamber of Commerce and the Capital Area United Way.

In 2005, Modern Healthcare named Ms. Fontenot as one of the Top 25 Women in Healthcare. In addition, she was named one of the 25 most influential women in Baton Rouge by the Greater Baton Rouge Business Report and received the 1997 YWCA Woman of Achievement Award.

Ms. Fontenot graduated with honors from the University of Mississippi with a BBA in accounting, earned her MBA from Northeast Louisiana University, is a certified public accountant (inactive), and is an ACHE Diplomate. She speaks frequently on the topics of healthcare, leadership, and women’s issues.

Dr. Grazier: To what do you attribute your successful leadership in the past ten years at Woman’s Hospital?

Ms. Fontenot: I work with an exceptionally talented team of professionals whom I respect and trust completely. Working with such a team allows me to participate nationally in key meetings and organizations. Our board is committed to sharing our best practices and programs with others, as almost every hospital in the country provides some component of women’s health. Our focus, size, and
volume provide unique information, and being involved with external groups allows me to bring back ideas from other organizations.

**Dr. Grazier:** You lead a large, independent specialty hospital at a time when most hospitals have partnered in some way with large systems. Do you see trends in organizational affiliation changing in the near future? Is there a growing demand for unaffiliated hospitals and women’s health facilities?

**Ms. Fontenot:** Women’s health services have mirrored many of the same trends seen in general hospitals and other industries. There was an era of growth in community-based facilities and then an increase in integrated delivery systems. On more than one occasion, I have been told by advisors, analysts, and consultants or read in the literature that specialty hospitals are dinosaurs—they are obsolete. Ten years ago, there were a number of freestanding women’s hospitals like Woman’s Hospital, and, as far as I know, all but us have affiliated with larger systems. Now, more and more specialties are trying to separate from the general hospital environment so that they can focus on doing a few things very well.

In 1968, a group of 21 OB-GYNs built Woman’s Hospital because they really wanted a hospital that focused on their patients. Today, almost half of our hospital’s board and two-thirds of our Foundation are OB-GYNs. A few years ago, the hospital board considered affiliating with a large hospital company, but the Foundation decided that it was not the direction the hospital should go. To remain an independent and a specialty hospital was a really high-stake risk at the time, but it turned out to be the right decision. Now we are stronger than we have ever been along all dimensions—financial, operations, market share, and satisfaction.

**Dr. Grazier:** Were there changes that the organization needed to make once the decision was made to remain independent?

**Ms. Fontenot:** We made a number of changes to position ourselves to remain independent. These included strengthening our balance sheet and making sure we had a high level of loyalty and commitment among our employees and medical staff. We flattened the organizational structure; now there are five levels between an entry-level employee and me. We have fewer executives and directors, even though revenues and patient volumes in many services have more than doubled in ten years.

Having a lean management team has many benefits. It has forced us to trust each other, to work together, and to rely on each other and has improved communication. Today, eight very capable vice presidents have divisional responsibility for every aspect of hospital operations, while I work with the board, medical staff, and community. I have oversight of these divisions and am involved to some extent but not in day-to-day matters.

**Dr. Grazier:** What challenges do you encounter?

**Ms. Fontenot:** Our current challenges are not unique. Lack of space was limiting our ability to expand services before Hurricane Katrina. Due to the evacuation...
of New Orleans, our community has grown overnight and at the level we expected to reach over the next eight to ten years. Medicaid reimbursement rates are also a challenge, particularly because of the type of patients we treat—women and infants. More than half of all infants in Louisiana are born to Medicaid-covered beneficiaries, and Medicaid covers the majority of the babies cared for in our Level III regional neonatal intensive care unit. Because of the devastation to the state budget caused by Hurricanes Katrina and Rita, Medicaid payments to hospitals will be cut by 9 percent if the federal government does not cover the state’s portion in the short term.

Dr. Grazier: Medicaid is usually not a generous payer.

Ms. Fontenot: True, but we have managed to turn our reimbursement challenges into opportunities. We work very closely with the Louisiana Department of Health & Hospitals. We spend a lot of time in advocacy, making sure that our state legislators and our congressional delegation in Washington are familiar with what we do and how critical we are to our community. Many times, even patients who have private insurance end up qualifying for Medicaid if their medical conditions become so complex and expensive.

Without the beds and services at Woman’s Hospital, the capacity would not be available to meet the state’s Medicaid program requirements in the greater Baton Rouge area. More than 8,000 babies a year are born at Woman’s Hospital. We have an 82-bed neonatal unit, and we are the referral center for most of the state for high-risk obstetrics and infant services. Subspecialists provide care to the most critically ill women and infants, and maternal fetal medicine specialists travel to other hospitals throughout Louisiana to help manage their high-risk obstetric patients.

We work continuously with local, state, and national decision makers to educate them about our needs. At the same time, we also have to be responsible and efficient in using our resources. We try to approach women’s health holistically by providing a full array of obstetric and gynecology services; an extensive breast cancer program, including digital mammography through mobile and satellite access; comprehensive diagnostic and therapy services; and a wellness center.

For us, health is not only about medical care, it is also about the traditional and nontraditional healthcare needs of a woman and her children. Ultimately, what we hope to do is strengthen families.

Dr. Grazier: You have an impressive financial background, with an MBA and a CPA. How important has this expertise been to your success?

Ms. Fontenot: Having a strong financial background has allowed me to grow in my career and, I believe, has facilitated my transition to chief executive officer from chief financial officer. It also gave me the right skills and confidence to move up in an organization at a time that it became more focused on financial performance. My financial background has also provided the board with a higher level of confidence, and we believe in the adage “no margin, no mission.” A strong
financial position allows us to consider and act on strategic opportunities when they present themselves.

**Dr. Grazier:** *How did you strengthen your balance sheet? Did you benchmark your financial performance against other institutions?*

**Ms. Fontenot:** In 1996, the board and administration committed to a target operating margin that allowed us to build our reserves. We also evaluated every program and service that was not self-supporting and not essential to core patient care. Some subsidiary operations were dissolved if they could not become self-sustaining. Other services were reconfigured, such as our home health agency and day care center. Today, both programs are doing well and make positive contributions to patient care and operational performance. We also renegotiated all of our managed care contracts. It is difficult for us to benchmark against others because we are unique; instead, we developed our own set of targets that made sense for us, such as building a cash reserve equal to at least six months of operating expenses. Once we achieved the first set of five-year targets, the targets were revised. We wanted to be in a position to weather the storms that might come our way—a major competitor coming into our market and outpricing us, a demise in Medicaid reimbursement, or man-made and natural catastrophes such as a hurricane.

**Dr. Grazier:** *How transparent are the finances across the organization?*

**Ms. Fontenot:** We are a 501(c)(3) organization, so our financial statements are available to everyone. A financial report is given to the medical staff, and a more detailed one is presented to the medical executive committee. Our independent auditors present the results of their annual audit to the Foundation. Management has access to the monthly financial statements at our leadership meetings, and an overview of monthly financial performance is presented at leadership meetings. Every employee is attuned to how the organization is doing financially because they all participate in a bonus program that is tied to financial performance and patient satisfaction results.

**Dr. Grazier:** *What particular challenges do you now face after Katrina?*

**Ms. Fontenot:** We were considering solutions for capacity shortage before Hurricanes Rita and Katrina, but we never anticipated that overnight our community would grow by 25 percent. I’m so proud of the way our employees, medical staff, and entire community have embraced the New Orleans evacuees. I couldn’t have imagined the even greater level of tolerance, understanding, and compassion that has occurred in this already caring community. The medical needs of Katrina patients are being met, but their mental health needs are complex and long term. There is a high level of depression and despair among these patients, especially during the holidays, because many don’t have a home or a job or have lost loved ones.

We’ve been blessed to be able to offer assistance in all of those areas. We want to be thought of as not just a place for medical care but also a place that offers
support services for these families. Our social services department has done an outstanding job, working hard to assist families in fulfilling their basic needs—food, shelter, and clothing.

Dr. Grazier: What advice do you have for other managers and those starting fresh in this field?

Ms. Fontenot: Hospital administration is an extremely rewarding career, but it is also very demanding. If you have a spouse or a family, make sure that they are on board with your career goals. My husband and daughter's support and understanding have made it possible for me to cope with the demands and to enjoy my career.

Work for an organization that you can fully commit to and that can facilitate professional growth. Look for opportunities to expand your skills and knowledge within that organization, particularly in nontraditional ways. If you want to move into a senior management position, make your interests known and volunteer for assignments. This lets leaders know you are interested and gives you a chance to work in an area that interests you.

Every 18 months or so, our executives assume operational responsibility for a new set of departments. Each vice president improves the department in a different way, depending on the vice president’s skills and interests. This rotation keeps the vice presidents’ job fresh and gives them valuable experience. It also helps them identify what they like and adds value to the departments.

Dr. Grazier: This year you were voted one of Modern Healthcare’s 25 most influential women. To what do you attribute this distinction?

Ms. Fontenot: The CEO is often a personification or the humanization of an organization. The fact that I was honored with this recognition is a tribute to the hard work and commitment that so many people put into our highly regarded and well-respected organization. We are very performance driven and goal oriented, and we regularly measure against our strategic plans and budgets. We believe in planning, execution, and achieving results.
Pay for Performance: Finding Common Ground

Kaveh Safavi, M.D., chief medical officer, Solucient, Evanston, Illinois

“We judge ourselves by what we feel capable of doing, while others judge us by what we have already done.” —Henry Wadsworth Longfellow

A recent study of the effect of pay-for-performance (P4P) programs on real quality improvement provides ammunition for both advocates and opponents of P4P (Rosenthal et al. 2005). Do payment incentives change performance or reward already high performers? Will P4P change consumption of resources enough to have a measurable impact on healthcare costs or simply add administrative burdens and new costs to keep score? If you listen to either side of the debate, you would be led to believe that the other view is either naïve or self-serving. Perhaps, however, a common ground can be reached about P4P.

The real issue may not be whether current P4P initiatives last. The true value of discussing P4P may be not to agree on how much we pay, or if we actually pay, for performance, but simply may be that we agree that certain methods of performance merit our time and attention to figure out how we can do better than we currently do.

Three core conflicts challenge all P4P approaches. Until these issues are brought to the surface and resolved, advocates and opponents will continue to be at the same table trying to outtalk each other.

Issue 1: Payers pay for the cost of care for a group of patients. Providers think of payment in terms of price paid to them for their effort.

Issue 2: Payers see the care delivery system as a whole and seek to hold the “enterprise” accountable for value and performance. Providers can only influence what is within their direct control.

Issue 3: Payers assume money incentives can solve the problem of practice pattern variations. Providers chose practice patterns for many nonfinancial reasons.

PAYMENT: IS IT ABOUT THE COST OF CARE OR PRICE OF SERVICES?

In large measure, the P4P movement was precipitated by payers who felt that double-digit increases in healthcare cost, coupled with the demise of managed care controls such as gatekeepers and prior authorization, were unaffordable and
unsustainable. The root beliefs are that payers pay too much already, cannot afford to pay more, and are not getting value for the money spent. Payers argue that current provider payment models pay for activity and therefore create economic incentives to do more but not to do better. According to this line of reasoning, if costs cannot be controlled by restricting access, then it will be done through payment reform.

A corresponding belief is that doing the right thing will improve quality, but the overarching need is to cut the growth in healthcare spending. No one has put forth P4P plans to simply pay more for quality without any explicit or implicit expectation of cost reduction or at least slowed cost increases. At most, payers have only been willing to advance some of the expected savings as an incentive for change.

Conversely, doctors and hospitals feel in crisis as well, but for exactly the opposite reasons. Because a large component of total cost increases in the last decade have come from more patients with treatable conditions, more services per patient, and new or more expensive options replacing established ones, healthcare budgets have been balanced by reducing the price paid per service. This has created a paradox. Payers see costs going up, but providers think that prices paid to them are flat or declining, especially in relation to their costs of doing business (i.e., labor costs, malpractice coverage, new information technology costs, replacement of outdated plant and equipment, and so on). Providers, therefore, expect more money than they currently receive to invest in solutions that will be needed to address performance gaps. This unresolved paradox often leaves the advocates and critics of P4P arguing about the mechanics of every P4P program and not agreeing on a resolution.

ACCOUNTABILITY: DOES IT FALL TO THE ENTERPRISE OR THE INDIVIDUAL?

We live in an accountability culture, yet we struggle to clarify if that accountability is held at the group or individual level. So whose performance is being paid for? Ultimately, we pay individuals for their actions, but we budget for the total cost of all actors in the system—many of whom have no relationship with, or even awareness of, the presence or actions of others.

All incentive systems face this challenge. The more complex and aggregated the total, the harder it becomes to fix the overall output of a system by turning one or two levers. This broad chasm is best illustrated by the distance between the current CMS hospital pay-for-performance demonstration program that pays hospitals as a whole to improve outcomes and the proposed gainsharing demonstration project being considered by Congress and CMS, which is based on a stalled New Jersey pilot (Becker 2003). This gainsharing model specifically seeks to provide incentives established by individual physician performance. Payment is not dependent on the performance of other physicians or the hospital. All of this is even more complicated by the tension between payers and patients regarding the ultimate judge of
performance. Depending on your point of view, the criterion for accountability can vary widely. Getting clarity on the placement of accountability and the corresponding use of incentives is essential to any forward progress.

**MONEY: CAN IT FIX THE PROBLEM?**
The third, and possibly the most challenging conflict, is anchored in the basic question, Will money incentives really change performance as measured by things like death or complications of care? A recent study about current P4P programs questioned if incentives changed anything or simply rewarded already high performers (Rosenthal et al. 2005). The basis for questioning the value of money incentives is rooted in several threads of evidence.

First, it is not clear that the practice pattern variations that drive performance measures are the result of misplaced financial incentives. Research indicates that practice variations often are experienced among patients with the same payment opportunities and flow from factors such as physician age, training biases, and practice venues (O’Neill and Kuder 2005). In addition, the physician culture is an expert one and places a high value on autonomy. In such cultures, financial rewards or penalties can be viewed as a threat to pursuing quality. Imposing a pay-for-performance penalty for a practice pattern rooted in a training experience can be compared to fining someone for believing in God; doing so is not likely to change belief but is likely to elicit anger. Many physicians have been described to be income targeters rather than income maximizers. In this situation, financial incentives that result from a change are often less compelling than the cost of implementing that change. Finally, similar practice pattern variations have been observed in other countries where physicians and hospitals are not paid on a per-service basis.

Second, healthcare outcomes usually result from the interplay of many factors in a complex system. We know several things about complex systems, but two seem particularly relevant. First, such systems are often the result of random occurrences coupled with positive reinforcement that builds on itself (Waldrop 1992). Second, although not optimal, the processes often get locked-in. The best example of this is the QWERTY typing keyboard that was developed by the Remington Company nearly a century ago to slow down typists so that they would not jam the keys. Several configurations have been proven to be more efficient for typing since then, but none have replaced the QWERTY layout. We still rely on this intentionally suboptimal input device to use many other tools that were designed to speed up our life.

**FINDING COMMON GROUND**
Where can we find common ground between those who advocate P4P and those who doubt either the motives or effects of a P4P approach to improving healthcare delivery? There are several places.
First, payers and providers can both agree that if nothing else, P4P is a call to action to look at healthcare services in a more quantitative and objective way to ensure that the structure and processes of care create the best possible outcome and safest possible system in the most efficient manner. Even if the term means different things to different people, it is a rallying cry that can be used as a carrot, stick, or both at the same time. Second, we fix what we focus on. The P4P dialog creates attention. It is likely that change will occur, hopefully for the better, on those things. Third, complex systems like healthcare delivery will only change once all the actors engage in a conversation (Shaw 2002). Pay for performance is a subject of conversation.

It may not matter how, or how much, we actually pay for performance. However, it may matter that we simply all agree that, for better or worse, payment should be related in some way to performance. Finding the perfect payment system may not be as important as spending time to work on how that system can be improved.

In future columns, I will examine several aspects of P4P strategies, including aligning physician performance with hospital performance, the use of efficiency measures as a measure of performance, and the role of the patient’s perspective on performance. I will also look at things that can go wrong with a P4P system. All of these topics can be used to start the conversation.

References

For more information on the concepts in this column, please contact Kaveh Safavi at ksafavi@solucient.com.
Leadership Competencies: An Introduction

Andrew N. Garman, Psy.D., associate chair, Department of Health Systems Management, Rush University, Chicago, and Matthew P. Johnson, graduate student, Department of Health Systems Management, Rush University

Our goal with this column is to provide a useful, practical introduction to competency modeling, a practice that is already a mainstay in many health professions and that is likely to find expanded use within health administration in the coming years. The competency model recently made available by the Healthcare Leadership Alliance (HLA) will serve to frame subsequent installments of this column. The Alliance was formed as a partnership between six of the major health care leadership professional associations in administration, nursing, and medicine, including the American College of Healthcare Executives (ACHE), Healthcare Financial Management Association (HFMA), Health Information Management Systems Society (HIMSS), American Organization of Nurse Executives (AONE), American College of Physician Executives (ACPE), and Medical Group Management Association and American College of Medical Practice Executives (ACMPE). In this column, we will illustrate several of the ways competency models can be used efficiently and effectively by individual leaders, leadership teams, and organizations to support their organizational strategy.

In this first installment, our focus is on clarifying what competencies are, what they can be used for, and what is currently happening within the profession related to competencies. We offer a practical definition of competencies, a task that calls for providing some historical context as well.

A BRIEF, PRACTICAL HISTORY

The modern concept of competencies traces back to the work of psychologist David McClelland (1973). McClelland was increasingly concerned about the widespread use of intelligence and related aptitude tests, which he viewed as too far removed from practical outcomes. He suggested that competencies—outcomes-relevant measures of knowledge, skill, abilities, and traits and/or motives—should be adopted as a more useful approach to aptitude measurement. Although competencies have been in use ever since, their popularity gained considerable momentum in the United States in the early 1990s, partly in response to the accelerated pace of change that many organizations were facing. The notion of positions as a static set of roles and responsibilities was giving way to the idea that positions could be more useful if described in general terms, allowing greater flexibility for their adaptation to changing organizational needs.
Traditional job design and analysis methods, while helpful in creating position specifications, were far less useful if the jobs themselves were constantly evolving. Competency modeling, while less rigorous, had two key advantages. First, it involved more general and thus more flexible descriptions of job requirements. Second, because competency descriptions were more general, they could more easily be made universal and thus could be tied to corporate strategy. The latter goal led to the concept of organizational-level or “core” competencies, a concept articulated in the widely cited article by Prahalad and Hamel (1990).

The subsequent explosion in competency activity brought along considerable confusion about appropriate practice. A tremendous variety of approaches were being used, but little definitive guidance existed, and there was even less of an evidence base to inform practitioners. In 1997, the Society of Industrial/Organizational Psychologists commissioned a task force to study the science and practice of competency modeling, with the goal of providing greater clarity and guidance. This effort did not result in an authoritative definition. Instead, it suggested a breadth of definitions to be used, none of which appeared to be a gold standard (Schippman et al. 2000).

For application in healthcare leadership, the following can be used as working definitions for competency-related concepts:

- **Competencies**: characteristics of employees with behavioral implications that are thought to be associated with successful performance of their job
- **Core competencies**: competencies thought to be associated with the success of an organization
- **Competency model**: a collection of competencies associated with successful performance
- **Competency modeling**: a systematic process for identifying and articulating competencies at either the individual or organizational level

**USES**

As tools for defining and communicating about performance, competencies can be used for a variety of performance improvement purposes. At the individual level, they can be used to clarify an individual’s roles, performance expectations, and plans for development. At the organizational level, competency models can help articulate the behavioral implications of a strategic vision.

For example, a hospital may seek to be recognized as particularly innovative, or alternatively as particularly customer focused. Each of these goals may, in turn, suggest a profile of specific behaviors that would be important for leaders to master. In the case of innovation, leaders should be particularly open to cutting-edge approaches and should foster a climate of creativity and a sense of safety in trying new things. In the case of customer focus, the behavioral implications may include
sensitivity to customer needs, as well as a focus on measuring and continuously improving the patient care experience.

Competency definitions can also create a path to a portfolio of strategic human resource management practices, including targeted recruiting, prescreening, using balanced scorecard, identifying career ladders, and talent management/succession planning.

COMPETENCY-RELATED ACTIVITIES IN HEALTH ADMINISTRATION TODAY
A tremendous amount of competency modeling activity has been happening in health administration in the past five years or so. These efforts provide a rich ground from which to draw on for local purposes. A number of the more noteworthy recent efforts are summarized in Table 1.

HEALTHCARE LEADERSHIP ALLIANCE
A key goal of the partnership between the members of the Alliance is to identify common ground of competencies across a breadth of healthcare leadership positions. These organizations' work in this area resulted in the development of a database of 300 competency descriptions as well as a database user's guide, both of which are available free of charge on HLA's web site (HLA 2005a, 2005b). The individuals that served on the task force commissioned to develop the directory included members of five of the Alliance organizations (Cynthia A. Hahn, FACHE, of ACHE; Andrea Rossiter, FACMPE, of ACMPE; Pamela Thompson, FAAN, of AONE; Joseph Abel, Ph.D., of HFMA; and Julianna Kazragys of HIMSS) with Mary Stefl, Ph.D., from Trinity University serving as consultant to the group.

In each of the next five installments of this column, we will explore the five competency domains identified by the HLA: business knowledge and skills, communication and relationship management, knowledge of the healthcare environment, professionalism, and leadership. Our next column will focus on business knowledge and skills.
### Table 1

#### Recent Health Administration Competency Models

<table>
<thead>
<tr>
<th>Source(s)</th>
<th>Population/Focus</th>
<th>How Model was Developed</th>
<th>Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ross, Wenzel, and Mitlyng (2002)</td>
<td>General (students and health administrators at all levels) / In-depth treatment of competencies relevant to health administration</td>
<td>Author experience; review of prior models</td>
<td>24 competencies in 4 clusters</td>
</tr>
<tr>
<td>ACMPE (2003)</td>
<td>Medical group management professionals / Develop and disseminate resources to advance the development of the profession</td>
<td>Subject matter expert panel and validation with incumbent sample</td>
<td>5 competency clusters</td>
</tr>
<tr>
<td>AUPHA (Hilberman 2004)</td>
<td>Graduate students and early careerists / Support pedagogy enhancement in graduate health administration education</td>
<td>Review of related competency models; consensus of expert panel</td>
<td>35 competencies in 3 clusters</td>
</tr>
<tr>
<td>Garman, Tyler, and Darnall (2004)</td>
<td>Early, mid-, and senior-level administrators / Identify behavioral competencies that distinguish higher from lower performers</td>
<td>Content validation with subject-matter experts</td>
<td>26 competencies in 7 clusters</td>
</tr>
<tr>
<td>NCHL (2004)</td>
<td>General (health administration and related fields) / Develop a benchmark model of core competencies for the profession</td>
<td>Qualitative meta-analytic review of prior competency models; refinement based on practitioner input</td>
<td>26 competencies in 3 clusters</td>
</tr>
<tr>
<td>HLA (2005a, 2005b)</td>
<td>General (health administration at all levels) / Develop and disseminate resources for core and specialty competencies in health administration across sub-disciplines</td>
<td>Collaboration of six major health administration professional associations (ACHE, AONE, HFMA, HIMSS, ACPE, MGMA/ACMPE)</td>
<td>300 competencies in 5 clusters</td>
</tr>
<tr>
<td>Dye and Garman (2006, in press)</td>
<td>Senior-level executives / Support self-development in areas that differentiate the highest performers from other strong performers</td>
<td>Experiences of senior executive search consultants</td>
<td>16 competencies in 4 clusters</td>
</tr>
</tbody>
</table>
References

For more information on the concepts in this column, please contact Andy Garman at Andy_N_Garman@rush.edu.
Opportunities for Improving Patient Care Through Lateral Integration: The Clinical Nurse Leader

James W. Begun, Ph.D., James A. Hamilton Term Professor, Division of Health Services Research and Policy, University of Minnesota, Minneapolis; Jolene Tornabeni, R.N., FACHE, FAAN, president, Jolene Tornabeni & Associates, Inc., Scottsdale, Arizona; and Kenneth R. White, Ph.D., FACHE, professor and director, Graduate Program in Health Administration, Virginia Commonwealth University, Richmond, Virginia

EXECUTIVE SUMMARY

Today, healthcare organizations are faced with the growing realization that functional and professional silos within the organization are counter to the provision of efficient and effective patient care and are fertile grounds for errors or sentinel events to occur. The improvement of patient care and prevention of errors require that collaboration among professionals occur at the patient care delivery level, not just within the leadership team.

A new nursing role—the clinical nurse leader, the first new nursing role advanced nationally in more than three decades—currently is under development in more than 180 pilot healthcare delivery sites across the United States and Puerto Rico. The clinical nurse leader is a master's-prepared nurse who assumes accountability for healthcare outcomes for a specific group of clients within a unit or setting through the assimilation and application of research-based information to design, implement, and evaluate client plans of care. The clinical nurse leader serves as a lateral integrator for the healthcare team and facilitates, coordinates, and oversees the care provided by the healthcare team. Healthcare administrators should seize the opportunity to work with nurses in healthcare delivery organizations to influence the early evolution and diffusion of this new role.

For more information on this article, please contact Dr. Begun at begun001@umn.edu.
The 2000 Institute of Medicine report *To Err Is Human*, citing evidence of 44,000 to 98,000 annual deaths in hospitals as a result of medical errors, was a wake-up call to healthcare leaders (Kohn, Corrigan, and Donaldson 2003). Studies have repeatedly demonstrated that medical errors made in organizations have little to do with the competence of staff but rather with the cumbersome and complex systems that have evolved over the years (Leape and Berwick 2005; Spear 2005). The systems in which our healthcare workers work are fragmented, complex, specialized, and siloed, creating gaps in communication, numerous handoffs, and more discipline-centered than patient-centered care. In addition, patient stays in institutions have been compressed so that more services are offered in a shorter amount of time. Community hospital average length of stay has steadily shifted downward from 7.6 days in 1980 to 5.7 days in 2003 (American Hospital Association 2005). All of this creates fertile ground for errors to occur.

One way to address the fragmentation of complex care and its compression into shorter time periods is to assign integration responsibilities to existing or new work roles. Within hospitals, case managers and quality improvement specialists have assumed such responsibilities. Another possibility now in the development stage is emanating from the profession of nursing. Nursing is the epicenter of most patient care delivered in organizations. Representing about 54 percent of all healthcare workers, nurses provide around-the-clock patient care in virtually all healthcare settings, from hospitals to nursing homes (Institute of Medicine 2004). Nurses are critically involved in patient safety as direct participants in the care process and as observers and coordinators of care provided by others. In one study, nurses intercepted 86 percent of all medication errors made by physicians, pharmacists, and others involved in providing medications for patients before the error reached the patient (Leape et al. 1995). Nurses’ locus at the patient bedside gives them a critical role in the prevention of error and promotion of safety.

Recognizing the need to more proactively manage patient services across professional boundaries, the nursing profession has embarked on the development of a new nursing role—the clinical nurse leader (CNL). The new proposal is at least provocative and at best transformative. Healthcare administrators need to be aware of this development so that they can contribute to its effective evolution in the best interests of the healthcare organization and patient. In this article, we describe the new role and opportunities to shape it.

**THE CLINICAL NURSE LEADER ROLE**

Development of the CNL role derives from studies begun in 2000 by the American Association of Colleges of Nursing (AACN). Two AACN task forces were convened to identify (1) how to improve the quality of patient care, and (2) how to best prepare nurses with the competencies needed to thrive in the current and
future healthcare system. The CNL role emerged following research and discussion with stakeholders as a way to engage highly skilled clinicians in outcomes-based practice and quality and safety improvement strategies. The issues and challenges needed to be addressed both at the educational level and at the patient care delivery site, requiring new relationships and partnerships to take place between practice and education (AACN 2002; 2003). The new role of the CNL is the first master’s-level role to be added to the profession of nursing in more than 35 years, following the clinical nurse specialist.

In early 2004, an implementation task force was created to identify education and practice partners who wanted to create the curriculum for the CNL role and redesign practice sites in which the CNL would function. This task force was chaired by a person (one of the coauthors) whose career had been in the practice arena. Practice and education must be intricately linked to ensure that both are working simultaneously to implement the needed changes. Education and practice partners for the CNL role implementation now total some 84 schools of nursing and 183 practice sites in 35 states and Puerto Rico.

It is expected that the implementation of the CNL role will vary across organizations; therefore, the role definition has not been overly specified. At the same time, standardization is needed so that communication and mobility across work settings and educational programs can occur. As defined by the task force, the CNL is a master’s degree–prepared nurse who assumes accountability for healthcare outcomes for a specific group of clients within a patient care unit or setting through the assimilation and application of research-based information to design, implement, and evaluate client plans of care. Among core competencies of the CNL that are expected or emphasized more than in other nursing roles are the ability to (1) communicate and collaborate with other members of the interdisciplinary healthcare team, (2) contribute to the assessment and reduction of risk, (3) manage and coordinate care at the microsystems level, and (4) use quality improvement methods.

The CNL is a clinical manager of care at the point of care to individuals and cohorts. The CNL acts as the lateral integrator of care by working with physicians and all other disciplines providing patient care services, such as social workers, respiratory therapists, nursing assistants, dietitians, pharmacists, and rehabilitation therapists. In this role the CNL facilitates, coordinates, and oversees the care provided by the entire healthcare team. In a hospital inpatient setting, the CNL would typically report to a nursing unit manager and be responsible for patients in a predetermined number of beds. In that situation, any formal authority of the CNL would be delegated by the unit manager.

The CNL role differs from that of a unit manager. The unit manager oversees the business side of the unit but cannot realistically also function as the person continually overseeing the clinical side of the delivery of care (Tornabeni 2006). The CNL is unit
based and in a position to see the patient as a whole, recognizing and correcting those gaps in communication, facilitating effective hand-offs, and supporting the creation of systems that eliminate the fragmentation of care. The CNL role becomes the lateral integrator for the patient care unit.

The lateral integration of care has been what is missing in the delivery of care to patients with complex needs. There has been no one who oversees patient care laterally and over time and who is able to intervene, facilitate, or coordinate care for the entire patient experience. The CNL will be instrumental in helping all disciplines see the interdependencies that exist between and among them. Case managers are used in many settings to perform some aspects of the lateral integration function, particularly with regard to moving inpatients to the most appropriate level of care as efficiently as possible. Case managers, however, are assigned to individual patients rather than to nursing units, generally deal with a small minority of patients, and do not oversee the delivery of care at the clinical point of care. Another role that addresses some aspects of lateral integration in inpatient facilities is the hospitalist physician. However, the hospitalist, like other physicians, is with the patient for a small proportion of the patient’s stay and is focused on the portion of care provided by physicians.

The CNL role is not restricted to the hospital setting. It is expected that the CNL will function across all settings in which healthcare is delivered, not just in the acute care setting. CNLs can function in community health centers, mental health treatment facilities, long-term care facilities, and other settings in which lateral integration will improve patient outcomes.

What makes the CNL movement different from past efforts within nursing? There has been thoughtful and broad engagement in looking at both the educational and competency needs of nursing to function in an environment that has changed dramatically and become extremely complex. This change requires advanced knowledge, new skills, and interdependent relationships. The approach is (1) being advanced as a partnership with education and practice, (2) occurring at a broad national level of activity, (3) being structured with milestones for the partnerships to attain, and (4) being facilitated by nurses and administrators at the highest levels within healthcare organizations. Simultaneous work is going on within the practice and academic sites. A curriculum is being developed to educate CNLs, and each practice site is engaged in redesigning its patient delivery sites where they will function. Additionally, there is engagement of several major nursing organizations: AACN, American Organization of Nurse Executives, and American Nursing Association. The fact that these partners are working together toward the same end is a major accomplishment in itself.

Finally, nursing recognizes the need to involve other stakeholders outside nursing, including the other clinical professions and healthcare administration, in the development of the CNL role. This outreach should be reciprocated and reinforced.
Success requires not just a new nurse plopped into an existing delivery model but rather a new environment in which patient care can thrive. In this sense, the CNL movement will not succeed if it evolves as a nursing project controlled solely by nursing. Redesigning the patient care delivery model and creating a patient-centered, rather than discipline-centered, system requires that all disciplines be at the table.

IMPLICATIONS FOR THE FIELD OF HEALTHCARE ADMINISTRATION

The field of healthcare administration should be involved more aggressively in the evolution of the CNL role. Such involvement is predicated on the assumptions that the administration has responsibility for lateral integration of patient care delivery within the organization, that lateral integration is crucial for quality and safety improvement, and that nurses can play an enhanced and critical role in lateral integration. What can healthcare administrators and educators do to meet these challenges?

First, administrators can examine their organizations’ current efforts to integrate the patient care experience. Many organizations are already evolving new nursing roles at the local level to address the concerns we have outlined. For example, care models designed by Baptist Hospital of Miami and Inova Health System include patient care facilitator and team coordinator roles that are similar to the CNL role. Patient care facilitators at Baptist Hospital of Miami, for example, are assigned geographically to 12 to 16 beds, and their primary job is to know each of the patients in the area, acting as their patient advocate and facilitator of care (Clark 2004). The patient care facilitator becomes the one consistent nurse with whom patients and families identify during the course of their stay.

Such efforts may or may not morph into the standardized CNL role as they evolve. Importantly, those new roles have demonstrated cost neutrality and, in some cases, cost benefit (Clark 2004; Drenkard and Cohen 2004). Potential cost savings derive from transitioning some staff out of the clinical care coordinator role, improved retention and recruitment of nursing staff, enhanced communication, promotion of patient safety, and better outcomes for patients.

Second, there is a need for widespread education about this new role. The AACN web site (www.aacn.nche.edu/CNL) contains a host of resources. Administrators can support the education of nurses and other workers through conference attendance and other means. Administrators can become part of the team managing the evolution of this role in their own facilities. Historically, each of the clinical health professions has evolved its own internal roles. Healthcare organizations and healthcare administrators have had a hands-off posture toward internal professional developments. As healthcare delivery becomes more interdependent among types of professionals, healthcare administrators can more aggressively contribute to the evolution of those professions in their role as lateral integrators. Similarly, healthcare administration educators should expose...
students to these and other contemporary developments in nursing (as well as other clinical professions) to model interdisciplinary practice for them.

Third, healthcare administrators and researchers can ask important and difficult questions about the new role and its rationale. They can help ensure that the role is not evolved without significant input from administrators. If the difficult questions are not addressed in the development stage, a role that excites nursing could face stiff opposition when rolled out to administration, engendering adversarial relationships. Among the questions to which administrators can call attention are the following: What are the key reasons sentinel events have happened in the organization, and how will the CNL role help prevent them? What are the organizational costs (time and money) of those sentinel events, and what impact will the CNL role have on those costs? How can the CNL role reduce the silos within the organization? How can other roles be redefined to ensure that the CNL is not just another add-on role and management layer? In particular, can some of the work currently performed by case managers and quality improvement specialists be facilitated or performed by CNLs? How will the CNL role be evaluated? Asking the tough questions now will enable the role to unfold in a more effective way in the long term. Healthcare researchers have an opportunity to evaluate the impact of the new role on costs, organizational culture, nurse satisfaction, and patient outcomes.

Fourth, healthcare administrators should consider championing the CNL role as a new approach to coordinating and integrating care for improved patient quality and safety. What administrators talk about and support visibly contributes to an organizational culture (Lambert 2004). If administrators are enthusiastic and supportive of the CNL role, others in the organization see that resources are being directed to new ways of solving old problems. Leading hospitals have a focus on all employees, with an emphasis on leadership development, staff learning, and motivation (Griffith and White 2005). This is an opportunity to demonstrate a focus on the largest category of healthcare employees.

Fifth, in addition to significantly affecting quality improvement and prevention of errors, the CNL role will help attract a new generation of leaders into nursing and make nursing a stronger profession. For the individual healthcare facility, the role can be used to symbolize the organization’s commitment to nursing and patient care in the same way magnet hospital recognition is used (American Nurses Credentialing Center 2005). This will improve the organization’s ability to recruit and retain nurses.

The new CNL role is not a panacea for the problem of lateral integration. Challenges resulting from power differentials and cultural differences among the health disciplines are deeply ingrained. Care for complex illnesses is fragmented across different facilities in different locations with different payers. The CNL, working at the clinical delivery level in one facility, will not be able to address all of these coordination issues. Working out the
details of CNL implementation so that the role best meets the needs of patients in a cost-effective manner will not be easy. However, the potential for patient-centered change at the intersection of nursing and administration certainly will not be realized unless supported from the highest leadership levels of the organization. We urge healthcare administrators, educators, and researchers to join in inspiring and shaping the new interdisciplinary workforce so critically needed.

References


Changes in Service Availability in California Hospitals, 1995 to 2002

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EXECUTIVE SUMMARY
Hospitals face serious financial challenges in the current healthcare marketplace. In response to these challenges, they may alter their service offerings, eliminating services that are perceived as money-losing or adding new services in areas where profitability is expected to be greater. Although research has examined hospital closures, the more subtle phenomenon of hospital service changes has not been systematically studied. This issue is important because different types of hospital service changes could have different effects on hospital financial viability: extensive service closures could contribute to a downward spiral leading to hospital closure, whereas adding new services might help improve a hospital’s finances.

This article examines changes in hospital service availability in California general acute care hospitals between 1995 and 2002. Our major findings indicate that many California hospitals made changes in their service offerings during the study period, although few made extensive changes. Altogether, about half of the hospitals in our study population either closed or opened at least one service. Nearly one-fourth of the hospitals in our study population closed one or more services, whereas just under one-third opened one or more new services. However, the vast majority of the hospitals that closed or added a service made only one or two such changes. In addition, few hospitals both closed and opened services. The service closed most frequently was normal newborn labor and delivery (obstetrics), whereas inpatient rehabilitation was the most frequently opened service.

Hospitals that made the most service changes tended to be small, rural, and financially troubled at the start of the study period. Among this group of hospitals, service closures were associated with continued financial deterioration, whereas new service openings were associated with improvements in key financial ratios.

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Hospitals in California face a number of serious challenges in the current healthcare marketplace. Aside from the financial issues facing hospitals across the country, such as increasing restrictions on reimbursement rates from both public and private payers, California hospitals must comply with state government mandates on such things as nurse staffing ratios and seismic upgrades to facilities.

Although hospital closures have generated a great deal of media attention and community concern, hospitals have other possible responses to the difficult financial environment. This article focuses on one such response: whether hospitals are changing their inpatient service offerings to improve their financial health. Financially troubled hospitals may face strong incentives to eliminate services that are perceived as money-losing. Conversely, hospitals may add new services in service areas where profitability is expected to be greater. Hospitals might seek to offer new services that make use of the latest medical technologies on the assumption that such services would be more profitable.

We used a variety of data sources and methodological approaches to study changes in hospital service availability in California. Our primary sources of quantitative data were from the California Office of Statewide Health Planning and Development (OSHPD). We used OSHPD’s patient discharge dataset, which contains data on every inpatient hospitalization in the state, to measure changes in hospital service offerings. We used information on each patient’s diagnosis-related group (DRG) and applied a unique categorization scheme to create 48 hospital service categories (HSCs). We then used changes in the number of inpatient discharges within these categories between 1995 and 2002 as our measure of service change.

We also used a separate OSHPD data source, the Hospital Annual Disclosure Reports, to aid in identifying the population of hospitals for the study. The annual disclosure reports contain information about hospital type, ownership, and other operational characteristics. In this study, we confine our focus to short-term, general acute care hospitals that were open (as indicated by having some number of inpatient discharges) for at least some part of the years 1995 and 2002.

About half of the California hospitals in our study population made changes in their service offerings during the study period, although few made extensive changes. Most hospitals making changes closed or opened only one or two services. Hospitals that made more extensive changes (closing four or more services or adding three or more new ones) were predominantly small, rural, and financially troubled. Hospitals closed obstetrics (labor and delivery) more often than any other service and opened inpatient rehabilitation units at a rapid pace.

This article is useful to both researchers and hospital managers for several reasons. First, our use of hospital discharge data to track changes in hospital service availability is an improvement over other potential methodologies such as checklists or surveys. Discharge data, particularly
when grouped (as here) into a relatively compact set of hospital service lines, allow service offerings to be measured based on actual utilization; this article provides a clear, easily replicable methodology that can be applied to data from other geographic areas or types of healthcare facilities. Second, the study's data and timeframe are of particular interest. California hospitals represent a substantial proportion of all U.S. hospitals, and the diversity of the state's regions (from densely urban to sparsely populated rural areas) ensures that the state's hospitals are also quite diverse. California often serves as a bellwether for trends in the broader U.S. hospital industry. Third, the timeframe of the study, 1995 through 2002, coincides with a period of considerable change in the healthcare market and regulatory environment, including a high level of consolidation among both health plans and hospitals, emergence of the managed care backlash, and passage of the 1997 Balanced Budget Amendment, which reduced Medicare payment levels substantially.

METHODS
In our analysis, we collapsed the more than 500 DRG codes into 48 HSCs using a coding scheme developed by Zwanziger, Melnick, and Eyre (1994). Although this system was developed to study hospital antitrust issues, it serves our purposes equally well. The authors constructed their service categories so that each one “will consist of all services that would generally be provided by the same (physician) specialty.” By reflecting actual patterns of clinical practice, this “approach . . . mirrors the one that HMOs and PPOs use in assessing the services that different hospitals are capable of providing” (Zwanziger, Melnick, and Eyre 1994, 438). The result is an easily comprehensible system that will vastly simplify any analysis using DRGs.¹

For the beginning and ending years of our study period—1995 and 2002—we recoded the DRG from each of the patient discharge records into Zwanziger, Melnick, and Eyre’s 48 HSCs. We compared the number of inpatient discharges in each HSC in 1995 and 2002 for each hospital in our study population of 368 general community hospitals that were open in both years. These hospitals account for more than 90 percent of all inpatient hospitalizations in California in both years. Evidence for a change in service availability—either a service closure or an opening of a previously unavailable service—is represented by either a sharp decrease or increase in discharges for a particular service category between 1995 and 2002. The question is what level of change in discharges is sufficient to constitute a change in a service’s availability at a particular hospital.

Measuring Changes in Service Availability
There were several considerations in making this determination. Looking at service closures first, it was necessary to select some percentage of decrease that, while high, is lower than 100 percent because a 100 percent decrease (i.e., from some nonzero number in 1995 to zero in 2002) is not a realistic threshold. Hospitals, particularly those

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with emergency capability, are expected to treat any person who arrives with a medical condition requiring immediate attention. Thus, hospitals may in the course of a year provide to a small number of patients a specific service that they do not routinely offer. As an example relevant to our findings, hospitals that have formally closed their labor and delivery (obstetrics) units may still deliver a small number of newborns each year, as a result of patients in labor who need immediate assistance coming unexpectedly through the hospital’s doors. More broadly, hospitals might perform certain procedures that they normally would not as a result of medical emergencies on the part of patients already admitted for other reasons.

For the same reason, we needed to establish a minimum level of discharges in 1995 from which a decline in 2002 could be measured to avoid designating a hospital as having offered a specific service category in 1995 when in fact it did not routinely do so. The most intuitively reasonable thresholds for determining whether a hospital has closed a service are (1) the number of discharges should have decreased by 95 percent or more between 1995 and 2002 and (2) this decrease should come from a minimum baseline of more than ten discharges in 1995. As a test of the sensitivity of the 95 percent threshold, we also ran the data analysis using 85 percent and 99 percent decreases as the criteria for service closure; we did not find evidence suggesting that the results were overly sensitive to the percentage threshold used.2

As with service closures, we had to establish the best criteria for determining what constitutes a new service opening. Again, the key point was choosing a threshold for percentage change and a baseline level of discharges in 1995. In this case, as we were measuring increases in discharges, there was the consideration that a percentage increase cannot mathematically be measured if the baseline number is zero (the calculation would involve undefined operations with zero). To remedy this problem, we simply changed any value (number of discharges) equal to zero in 1995 to one. We again set the required baseline level of 1995 discharges at ten, although in this case a hospital must have had fewer than ten discharges to be included in the analysis. We chose a 1,000 percent or greater increase (from a baseline of nine or fewer discharges in 1995) as the threshold required for a service to count as opened by a hospital. Again, we performed a simple sensitivity analysis using two other thresholds—500 percent and 1,500 percent—as a test of the appropriateness of the 1,000 percent criterion and did not find that the results were greatly influenced by the changes.

Analysis of the patient discharge data using the methodology just described produced a database listing the number of services closed and opened (out of 48 possible) by each of the 368 hospitals in the study population. These results can be viewed from both the hospital perspective (i.e., how many services a particular hospital closed) and the service perspective (i.e., how many hospitals opened a specific
service). We present the results from both perspectives.

**Verifying Service Changes**

Because hospitals may undergo mergers and administrative changes that affect the reporting of services, an additional step was necessary. The patient discharge data are reported at the hospital level, with each hospital reporting under an identification number supplied by OSHPD. But the constitution of each hospital as an entity can change over time: OSHPD allows hospitals to consolidate data reporting from more than one physically distinct facility under a single identification number. For example, a hospital might purchase a nearby competitor and then integrate the purchased hospital into its operations; after the purchase, the two physical facilities would together constitute a single entity with two campuses. Alternatively, a hospital system might consolidate previously separate data reporting for two of its facilities within close proximity of each other as an administrative simplification.

A substantial number of California hospitals made such changes during the study period, both through mergers between previously unrelated hospitals and through administrative reorganizations within existing hospital systems.

Hospital mergers and administrative reorganizations result in some apparent service changes, as measured by changes in discharges reported by OSHPD-defined hospitals, that are merely artifacts of the data and methodology rather than genuine net changes in service availability. As an example, when a hospital purchases a nearby competitor and combines the operations of both facilities under the purchasing hospital’s OSHPD identification number, a service that had been available at the purchased hospital but not at the purchaser would appear in the 2002 data as a new service at the merged hospital entity. However, such an instance would not represent a net addition of capacity because at the operational level nothing has changed at either physical facility.

As a result, the raw results of the data analysis must be filtered to find instances of the scenario described above, which we might call phantom service availability changes, and separated from legitimate service changes. This is particularly important for new service openings, as mergers and data reporting consolidations by their nature make phantom service additions possible. Service closures are affected as well, however. In some instances, an apparent service closure at a hospital proved on closer investigation to be a transfer of the site of that service between nearby facilities within a hospital system that was still reporting discharges as separate entities. This occurred in several instances in large, urban, multicampus medical centers. (In these cases, the corresponding new service opening at the other facility was filtered out as well.)

We removed what we considered phantom service availability changes from the raw results. The criteria for removal were as follows. We cross-checked all hospitals with service changes (in the raw results) with a separate OSHPD database of mergers and data reporting consolidations...
undertaken by hospitals during the study period. For any hospitals with service changes that, according to this database, had been involved in mergers or data reporting consolidations with other facilities during the study period, we looked at each individual service change to determine whether the change was a result of the activity. To do so, we considered whether the constituent parts of merged or consolidated hospitals offered a particular service prior to the merger or consolidation, using the same criteria for baseline level of discharges discussed above. We also carefully examined service changes at multicampus urban medical centers to determine whether the sites of the services involved had been transferred to nearby facilities, absent a change in data reporting status for the facilities involved. Finally, we excluded from the final results a small number of hospitals that, according to the unfiltered results, had made large numbers of service closures but in fact experienced either full facility closure or merger (and reporting consolidation) with another hospital during 2002, the endpoint of the study period.3

RESULTS
Many California hospitals made changes in their service offerings during the study period (1995 to 2002), although few made extensive changes. Altogether, about half of the hospitals in our study population either closed or opened at least one service. Nearly one-fourth of the hospitals in our study population closed one or more services, whereas just under one-third opened one or more new services. However, the vast majority of the hospitals that closed or added a service made only one or two such changes. In addition, few hospitals both closed and opened a service. The service closed most frequently was normal newborn labor and delivery (obstetrics), whereas inpatient rehabilitation was the most frequently opened service. These findings are summarized in Table 1.

Service Closures
The overall incidence of service closure by hospitals was fairly modest. In total, 83 of the 368 hospitals in the study population, or 22.6 percent, closed at least one hospital service category. Of these 83 hospitals, 53 closed only one service; 17 hospitals closed two services, and 7 hospitals closed three services each. Only six hospitals closed four or more services; the maximum number closed by any one hospital was eleven. One hundred forty-seven services were closed during the study period. (Five hospitals with apparent service closures in the unfiltered results were excluded from the final data, as discussed above.)

The six hospitals that closed four or more services were predominantly small and rural. Five of the six had fewer than 100 staffed beds in 2002, and the group had an average of only 60.3 beds, as compared with an average of 187.6 and a median of 153 staffed beds for the study population of 368 hospitals. Four of the six hospitals have been designated as small and rural by OSHPD, a designation given to only 19.8 percent of the study population.
TABLE 1
Summary of Key Findings

<table>
<thead>
<tr>
<th>Finding</th>
<th>No. of Hospitals</th>
<th>% (of 368 Hospitals)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospitals making any service change</td>
<td>181</td>
<td>49.2%</td>
</tr>
<tr>
<td>Hospitals closing one or more services</td>
<td>83</td>
<td>22.6%</td>
</tr>
<tr>
<td>Hospitals opening one or more services</td>
<td>120</td>
<td>32.6%</td>
</tr>
<tr>
<td>Hospitals both closing and opening services</td>
<td>22</td>
<td>6.0%</td>
</tr>
<tr>
<td>Hospitals closing obstetrics (labor and delivery)</td>
<td>23</td>
<td>6.3%</td>
</tr>
<tr>
<td>Hospitals opening inpatient rehabilitation</td>
<td>54</td>
<td>14.7%</td>
</tr>
</tbody>
</table>

Source: Authors' analysis of OSHPD patient discharge data.

TABLE 2
Hospitals Closing Four or More Services Between 1995 and 2002

<table>
<thead>
<tr>
<th>Hospital</th>
<th>County</th>
<th>No. of Staffed Beds</th>
<th>Small/Rural Designation</th>
<th>No. of Services Closed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Hospital of Long Beach</td>
<td>Los Angeles</td>
<td>60</td>
<td>No</td>
<td>11</td>
</tr>
<tr>
<td>Tri-City Regional Medical Center</td>
<td>Los Angeles</td>
<td>137</td>
<td>No</td>
<td>8</td>
</tr>
<tr>
<td>Sanger General Hospital</td>
<td>Fresno</td>
<td>26</td>
<td>Yes</td>
<td>6</td>
</tr>
<tr>
<td>Chowchilla District Memorial Hospital</td>
<td>Madera</td>
<td>24</td>
<td>Yes</td>
<td>5</td>
</tr>
<tr>
<td>Coalinga Regional Medical Center</td>
<td>Fresno</td>
<td>76</td>
<td>Yes</td>
<td>4</td>
</tr>
<tr>
<td>Healdsburg General Hospital</td>
<td>Sonoma</td>
<td>39</td>
<td>Yes</td>
<td>4</td>
</tr>
</tbody>
</table>

Source: Authors' analysis of OSHPD patient discharge data and Hospital Annual Disclosure Report data.

Key information on these six hospitals is presented in Table 2.

Hospitals closed obstetrics (labor and delivery) services more often than any other type of service. Two other related services, neonatology and OB/GYN surgery, were among the top five most frequently closed services. Several of the most-closed services were also opened by a substantial number of hospitals, suggesting that a redistribution of service capacity accounted for some of the observed changes in service availability. Table 3 lists all HSCs closed by six or more hospitals.

Service Openings
More hospitals opened new services than closed services between 1995 and 2002. A total of 120 hospitals opened one or more new services (32.6 percent of the study population). The vast majority—94 hospitals—added only one service. Of the remainder, 19 hospitals opened two services, six opened
TABLE 3
Hospital Service Categories (HSCs) Closed by Six or More Hospitals

<table>
<thead>
<tr>
<th>HSC No.</th>
<th>HSC Type</th>
<th>HSC Name</th>
<th>No. of Hospitals Closing the HSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>48</td>
<td>Medical</td>
<td>Normal newborn</td>
<td>23</td>
</tr>
<tr>
<td>9</td>
<td>Specialized services</td>
<td>Chemotherapy</td>
<td>20</td>
</tr>
<tr>
<td>14</td>
<td>Medical</td>
<td>Neonatology</td>
<td>19</td>
</tr>
<tr>
<td>12</td>
<td>Medical</td>
<td>Rehabilitation</td>
<td>14</td>
</tr>
<tr>
<td>36</td>
<td>Surgical</td>
<td>OB/GYN surgery</td>
<td>8</td>
</tr>
<tr>
<td>11</td>
<td>Medical</td>
<td>Psychiatry</td>
<td>6</td>
</tr>
<tr>
<td>18</td>
<td>Specialized services</td>
<td>Radiology</td>
<td>6</td>
</tr>
</tbody>
</table>

Source: Authors’ analysis of OSHPD patient discharge data.

three services, and one hospital opened five. Thus, although more hospitals opened services than closed them, fewer of the service openers added multiple services. In total, hospitals opened 155 new services during the period. (Four hospitals with service additions resulting from mergers and consolidations were deleted from the initial total.)

Seven hospitals added a substantial number of new services, here defined as three or more. Interestingly, this group of hospitals was also predominately small and rural, as were the hospitals that closed four or more services. Five of these seven had fewer than 100 staffed beds in 2002, and the average bed size for the group was 61. Four of these seven had received OSHPD’s small and rural designation. Table 4 presents key information on these seven hospitals opening a substantial number of services.

By far the most frequently added service was rehabilitation, with 54 hospitals (14.7 percent of the study population) opening inpatient rehabilitation units. The second most frequently opened service, renal dialysis, opened in only 12 hospitals. Table 5 lists all HSCs opened by six or more hospitals.

DISCUSSION
A substantial proportion of California general acute care hospitals made at least one change in their service offerings between 1995 and 2002. Although few hospitals made more than one or two changes, some trends in the aggregated data stand out. This section briefly discusses the most suggestive findings.

The two small groups of high-closer and high-opener hospitals present an interesting comparison. As mentioned above, both groups are composed mainly of small and rural hospitals. As part of the broader research project from which this piece is drawn, we examined some basic indicators of financial performance, such as operating and total margins and net patient revenues.
TABLE 4
Hospitals Opening Three or More Services Between 1995 and 2002

<table>
<thead>
<tr>
<th>Name of Hospital</th>
<th>County</th>
<th>Staffed Beds</th>
<th>Small/Rural Designation</th>
<th>Services Opened</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kingsburg Medical Hospital</td>
<td>Fresno</td>
<td>35</td>
<td>Yes</td>
<td>5</td>
</tr>
<tr>
<td>Coast Plaza Doctors Hospital</td>
<td>Los Angeles</td>
<td>123</td>
<td>No</td>
<td>3</td>
</tr>
<tr>
<td>Colorado River Medical Center</td>
<td>San Bernardino</td>
<td>49</td>
<td>Yes</td>
<td>3</td>
</tr>
<tr>
<td>Community Medical Center (Clovis)</td>
<td>Fresno</td>
<td>100</td>
<td>No</td>
<td>3</td>
</tr>
<tr>
<td>Lincoln Hospital Medical Center</td>
<td>Los Angeles</td>
<td>36</td>
<td>No</td>
<td>3</td>
</tr>
<tr>
<td>Mammoth Hospital</td>
<td>Mono</td>
<td>15</td>
<td>Yes</td>
<td>3</td>
</tr>
<tr>
<td>Sutter Lakeside Hospital</td>
<td>Lake</td>
<td>69</td>
<td>Yes</td>
<td>3</td>
</tr>
</tbody>
</table>

Source: Authors’ analysis of OSHPD patient discharge data and Hospital Annual Disclosure Report data.

TABLE 5
Hospital Service Categories (HSCs) Opened by Six or More Hospitals

<table>
<thead>
<tr>
<th>HSC No.</th>
<th>HSC Type</th>
<th>HSC Name</th>
<th>No. of Hospitals Opening the HSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Medical</td>
<td>Rehabilitation</td>
<td>54</td>
</tr>
<tr>
<td>19</td>
<td>Specialized services</td>
<td>Renal failure (dialysis)</td>
<td>12</td>
</tr>
<tr>
<td>29</td>
<td>Surgical</td>
<td>Cardiology</td>
<td>9</td>
</tr>
<tr>
<td>14</td>
<td>Specialized services</td>
<td>Chemotherapy</td>
<td>7</td>
</tr>
<tr>
<td>11</td>
<td>Medical</td>
<td>Psychiatry</td>
<td>7</td>
</tr>
<tr>
<td>13</td>
<td>Medical</td>
<td>Substance abuse</td>
<td>6</td>
</tr>
</tbody>
</table>

Source: Authors’ analysis of OSHPD patient discharge data.

per bed, for the hospitals in the study population (Kirby et al. 2005). Both the high-closer and high-opener groups of hospitals were financially troubled in 1995, with considerably lower values on these basic indicators than the rest of the study group, but by 2002 the high-opener hospitals had sharply improved their finances.

The six hospitals that closed four or more HSCs between 1995 and 2002 saw their financial performance deteriorate sharply during the same period. Their average operating margin decreased from –3.0 percent to –7.3 percent, their average total margin fell from –0.8 percent to –2.5 percent, and their average net patient revenues per staffed bed dropped from $330,832 to $203,592 (all figures are aggregated group averages for the six hospitals). By contrast, the group of seven hospitals per bed, for the hospitals in the study population (Kirby et al. 2005). Both the high-closer and high-opener groups of hospitals were financially troubled in 1995, with considerably lower values on these basic indicators than the rest of the study group, but by 2002 the high-opener hospitals had sharply improved their finances.

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that opened three or more HSCs experienced substantial improvement in financial performance during the study period. The group’s average operating margin went from –5.5 percent in 1995 to +4.4 percent in 2002, their average total margin increased from +1.9 percent to +4.8 percent, and average net patient revenues grew from $206,495 to $552,178 per staffed bed (all figures aggregated for the group). Although our analysis does not posit any sort of causal relationship between these service changes and the financial performance of the hospitals making them, this correspondence strongly suggests that aggressive cutbacks in service offerings may not be the best strategy for financial stabilization.

Our findings on the types of services most frequently closed or opened are also of significant interest. Some service closures are clearly the result of changes in medical practice: For example, chemotherapy and radiology are becoming primarily outpatient procedures. Other services, such as labor and delivery, still generally require an inpatient stay but are closing in a large number of hospitals, particularly in rural areas. Although our broader study did not find evidence that these labor and delivery closures reduced access to care, this situation must continue to be monitored carefully.

The aggressive expansion into the field of inpatient rehabilitative services by general community hospitals is another interesting finding. One factor clearly driving this growth is population aging, as the bulk of patients in this service category are elderly persons needing rehabilitative therapy following strokes, injuries from falls, and the like. Medicare reimbursement policies play a critical role as well. Until recently, inpatient rehabilitation services were exempted from Medicare’s prospective payment system (PPS), which in 1983 replaced the cost-based payment system for most services. Both freestanding specialty rehabilitation hospitals and rehabilitation units within general acute care hospitals were able to continue receiving the more generous cost-based reimbursements, which made rehabilitation a profitable service area. Unsurprisingly, the PPS exemption encouraged rapid growth in the provision of inpatient rehabilitation services. The number of facilities or hospital units grew rapidly, as did Medicare expenditure on rehabilitation (Thompson and McCue 2004).

Rehabilitation was placed under the PPS in 2002, however; this change is widely expected to result in lower reimbursements for the service, as it has done for hospital services generally. Presumably, this will lessen interest among general hospitals in adding rehabilitation units, as their potential profitability is thus constrained. The implementation of the PPS may also create incentives for existing providers to avoid patients with more serious needs and discharge more quickly those patients they do accept (Stinemann 2002). More generally, the lag time between changes in population demographics and health status and public-payer reimbursement policies may lead to a mismatch between community needs and the supply of hospital capacity for certain services. In this case, the long-standing PPS exemption...
may have encouraged overexpansion of rehabilitation units within general community hospitals. Similarly, low Medicaid (in California, Medi-Cal) reimbursements for obstetrics services undoubtedly factor in hospital decisions to close labor and delivery units.

**CONCLUSION AND SUGGESTIONS FOR FUTURE RESEARCH**

Although the primary motivation for this project was to study changes in hospital service availability in California, the methodology we have developed is clearly applicable to other states or multistate analyses. Any state for which inpatient discharge records containing the primary DRG are available may be included in such an analysis. Moreover, the methodology could also be used to establish a cross-sectional census of service availability for a hospital population of interest. Researchers can reasonably assume that discharge records have a high degree of accuracy, as hospitals have strong economic incentives to keep good records of diagnoses and procedures performed (because the same patient information will also be used in billing third-party payers). In particular, patient discharge data are much more reliable than other potential sources, such as checklists of services provided, prepared by hospital administrative personnel.4

The methodology developed here should be applied to much larger populations (or samples) of hospitals than our study group. Because so few hospitals made large numbers of changes in service offerings, we were not able to draw generalizable conclusions. A multistate comparison or large sample of hospitals nationwide would provide sufficient data for statistical inference while controlling for state- or region-specific factors.

Continued expanded research using this methodology, and linked with financial data, can help address a core issue faced by hospital executives coping with financial challenges: Should services be diversified as a means of attracting new business, or should the variety of services offered be contracted, allowing hospitals to focus on specific, limited areas of clinical practice? Although the present research is primarily descriptive rather than prescriptive, our findings should be of interest to healthcare managers and suggest directions for future research. In particular, the varied experiences of the high-closer and high-opener groups, while far too small in number for their experiences to be statistically generalizable, may still be instructive. Among California hospitals the closure of large numbers of services did not lead to financial stability; in fact, service closures appeared to signal a downward spiral of lower patient volume and revenue, continued service cuts, and eventual closure. By contrast, hospitals that responded to financial adversity by offering new services showed marked financial improvement. Applying the methodology for measuring service changes presented here to a larger group of hospitals across the United States could test the effects of these contrasting hospital strategies in a generalizable manner.

Future research should also look closely at the effects of service closures
on the community. Service offerings at small, rural hospitals should be monitored to determine if closures of essential services are negatively affecting access to care in rural communities. Some level of service closures during the study period was undoubtedly appropriate given concerns about hospital (and specialist) oversupply during the 1990s, as managed care began to fully take root in the healthcare system (Galvin 1999). But loss of services in rural hospitals, particularly in isolated areas, could eventually harm access to care and health outcomes for rural residents. Health policymakers have a legitimate interest in preventing such a development, and the methodology used here is a powerful tool for ongoing monitoring of service availability.

Finally, future research should examine the impact of specialty hospitals, particularly newer, physician-owned facilities, on general community hospitals. This is a relatively new phenomenon, but one that has already attracted considerable attention. Many healthcare analysts are concerned that, because specialty hospitals tend to treat patients needing more profitable services such as cardiac care, such hospitals could drain away the most profitable patients from general community hospitals, further undermining their financial prospects (Devers, Brewster, and Ginsburg 2003). Moreover, such hospitals have an incentive to accept only those patients likely to incur lower costs (within a given diagnostic category), leaving sicker patients to already burdened public and not-for-profit hospitals. A federal government study of specialty hospitals indeed found evidence of this type of favorable patient selection (U.S. General Accounting Office 2003). The methodology developed here could be used to measure the effects new specialty hospitals may have on service availability among competing general community hospitals.

Notes
1. The list of HSCs and their corresponding DRGs, including an updated version of the 1994 coding scheme incorporating changes in the DRG system through the year 2002, is available from the authors on request.
2. These results are available from the authors.
3. Further details on this verification procedure, including pre- and postverification lists of hospitals making service changes, are available from the authors.
4. The OSHPD Hospital Annual Disclosure Report data contains just such a checklist. We initially considered it as a data source for this research but found the data quality to be poor.

Acknowledgment
This study was supported by a grant from the California HealthCare Foundation. The California HealthCare Foundation is a non-profit philanthropic organization whose mission is to expand access to affordable, quality healthcare for underserved individuals and communities and to promote fundamental improvements in the health status of the people of California.

References

**PRACTITIONER APPLICATION**

*David D. O’Neill, J.D., CHE, senior program officer, California HealthCare Foundation, Oakland, California*

My initial reaction to this study was that it states the obvious: hospitals open and close services in accordance with market conditions and financial performance, successful hospitals tend to open more services than unsuccessful ones, and hospitals that close multiple services are probably financially troubled. The time period covered (1995 to 2002) was one of almost unprecedented challenge for California hospitals. From 1997 through 1999, the median operating profit for California hospitals was less than 0.10 percent. Not all hospitals were affected equally. Rural and safety-net hospitals were particularly challenged. What, if anything, might be learned from this study to help a healthcare executive striving to serve the community in this turbulent environment? I found three lessons.

First, hospital organizations are more nimble than might have been expected. The correlation between the opening of new services, particularly the opening of inpatient rehabilitation services in response to reimbursement changes, and success was striking. The same is true of some service closures in response to changes in medical practice patterns. It is unfortunate that the study was limited to inpatient services because this nimbleness would probably be demonstrated more completely in outpatient services.

Second, hospitals should consider inpatient service closure with care. Closure of multiple services is a clear sign of either financial distress or withdrawal from the community served. Considering closure of more than a single service should
stimulate a careful review of the hospital’s longer-term future. In particular, the decision to close high-visibility services, such as obstetrics, may aggravate already weak market share and signal to the community that the organization is in distress. It would be useful to have a longer-term follow-up of the financial health of the 23 hospitals that closed obstetric services.

Third, it was noteworthy that closure of obstetric services did not appear to reduce access to care. With the notable exception of remotely located populations, patients apparently are willing to travel to a hospital of first choice for services they believe to be most appropriate for their needs. To be successful in meeting the needs of local markets, hospitals will have to provide quality care and service at an appropriate price.

Note: David O’Neill was the chief executive officer at one of the study hospitals when the study was conducted. He is now senior program officer with the California HealthCare Foundation. However, he was not on the foundation staff when the study was commissioned. The views and opinions expressed in this practitioner application are those of the authors and do not represent the views of the California HealthCare Foundation.
Hospital Information Technology and Positive Financial Performance: A Different Approach to Finding an ROI

Nir Menachemi, Ph.D., assistant professor and director of Center on Patient Safety, Florida State University College of Medicine, Tallahassee; Jeffrey Burkhardt, Ph.D., professor of health administration, University of Alabama, Birmingham; Richard Shewchuk, Ph.D., professor of health administration, University of Alabama, Birmingham; Darrell Burke, Ph.D., assistant professor of medical informatics, Florida State University College of Medicine; and Robert G. Brooks, M.D., professor and associate dean for health affairs, Florida State University College of Medicine

EXECUTIVE SUMMARY

This empirical study examined the relationship between information technology (IT) utilization and hospital financial performance. Using primary and secondary data, we specified and tested a series of regression models that examined this relationship in Florida hospitals. In addition, we employed performance group analysis for a select group of operational performance indicators. Findings suggested a significant and positive relationship between increased levels of IT use and various measures of financial performance, even after controlling for case-mix acuity and bed size.

Regardless of the analysis or method employed, the results indicated that IT adoption is consistently related to improved financial outcomes both overall and operationally. This relationship was present when examining IT collectively and for clinical IT, administrative IT, and strategic IT as individual measures. Lastly, although higher IT use was associated with a higher level of revenues, income, or cash flow, higher use was also associated with ratios based on higher expenses. This probably reflects the relatively high acquisition costs associated with obtaining and maintaining sophisticated IT systems. Given that a true return on investment is so difficult to obtain for many individual hospitalwide IT systems, our data can serve as a proxy for hospital leaders and policymakers who want to understand the potential financial effects of investing in IT in the acute care setting.

For more information on this article, please contact Dr. Menachemi at Nir.Menachemi@med.fsu.edu.
The use of information technology (IT) in healthcare has been linked with numerous organizational benefits. A number of IT applications have been associated with improved quality of care and patient safety. For example, the use of computerized physician order entry (CPOE) can result in a significant reduction in serious medication errors when used alone (Bates et al. 1998) and an even greater reduction when used with a clinical decision support system (Bates et al. 1999). Other general benefits of IT use in healthcare include increased satisfaction among clinicians (O’Connell et al. 2004), increased accountability and efficiency among nurses (Staggers 2004), and improved management of patient information and administrative efficiencies (Mitchell and Sullivan 2001).

Despite the advantages IT holds for improved outcomes overall, adoption of IT in healthcare has lagged behind that in all other major industries (Chin 2004; Dorenfest 2000; Weill and Broadbent 1998). Specifically, information system applications used for clinical care (as opposed to administrative functions) have been even slower to diffuse both overall (Ash et al. 2004; Burke et al. 2002; Health Information Management and System Society [HIMSS] 2002) and specifically in Florida (Menachemi, Burke, and Brooks 2004). Common adoption barriers include resistance to training and use among physicians (Ball 1992), dissatisfaction with vendor product incompatibility (Dick and Andrew 1996; McDonald 1997), and lack of uniform data standards (Aspden et al. 2003).

Additionally, the relatively high investment costs of IT have been implicated as a major barrier to adoption (Blair and Hilts 2003; Erstad 2003; Johnson 2001). High costs are particularly problematic because few published studies demonstrate a true return on investment (ROI) associated with IT in healthcare. Numerous challenges exist when trying to quantify the benefits of health IT, particularly when those benefits are realized outside the area of the hospital being examined. Furthermore, the studies that exist tend to be anecdotal in nature (FirstConsultingGroup 2003), focus on one specific application type (Kohli and Devaraj 2004; Wang et al. 2003), have mixed results (Smith, Bullers, and Piland 2000), examine only a small sample (n = 8) of hospitals (Devaraj and Kohli 2003), or take place in limited settings such as an academic medical center (Mekhjian et al. 2002) or psychiatric hospital (Kramer, Tillinghast, and Marge 1999).

No studies have demonstrated an overall financial benefit or ROI associated with a portfolio of IT investments in healthcare organizations. This is true for a variety of reasons, including the difficulty in measuring IT capabilities from an organization level. Recent work (Burke and Menachemi 2004), however, has begun to develop a framework to capture IT capability from a hospital IT portfolio perspective. The purpose of this article is to examine the relationship between IT adoption...
and financial performance in hospitals based on this recent framework.

LESSONS FROM OTHER INDUSTRIES
Outside the healthcare industry, researchers have taken a macro-level approach to the study of IT and firm performance (Bakos and Treacy 1986; Bharadwaj 2000; Byrd and Davidson 2003; Kohli and Devaraj 2003; Melville, Kraemer, and Gurbaxani 2004; Santhanam and Hartono 2003; Thatcher and Pingry 2004). From a theoretical standpoint, superior organizational performance should be attributable to organizational resources and capabilities. Rooted in strategic management literature, the resource-based view of the firm suggests that organizations compete on the basis of unique organizational resources that are valuable, rare, difficult to imitate, and nonsubstitutable by other resources (Barney 1991; Conner and Sobol 1991).

Building on this theory, empirical research has suggested that (nonhealthcare) firms with high IT capabilities tend to outperform a control sample of firms on a variety of financial measures (Bharadwaj 2000). Moreover, research has found that firms with superior IT capability indeed exhibit superior current and sustained firm performance when compared to average industry performance, even after controlling for prior firm performance (Santhanam and Hartono 2003). For example, earlier adoption of ATMs in the banking industry was associated with increased market share and income (Dos Santos and Peffers 1995). Similarly, in that study the number of technologies adopted was associated with increased financial performance measured by market share and return on assets (ROA).

PURPOSE
Research outside the healthcare field has positively linked IT adoption to superior financial outcomes. Given the difficulty in identifying ROI for individual health IT applications (Arlotto and Oakes 2004; Bauer 2003; Fleming 1994; Glaser 2003; Newell and Christensen 2003; O’Connor 2004; Roberts, Sensmeir, and Wise 2003; Vogel 2003), we employed a macro-level approach to study IT and hospital performance. The purpose of the current article is to examine the overall relationship between IT utilization and financial performance in hospitals.

METHODS
Data Sources
The present analyses combine both primary and secondary data. The two main sources of data included (1) a hospital IT survey conducted in Florida between May and October 2003 and (2) Florida hospital financial statements and a case-mix index obtained from the Florida Agency for Healthcare Administration (AHCA) for 2003. Following is a description of each data source.

Hospital IT Data The hospital IT data for the current report are part of a larger study (Brooks et al. 2005; Burke, Menachemi, and Brooks 2005; Menachemi, Burke, and Brooks 2004; Menachemi et al. 2005a, 2005b;
Hospital Information Technology and Positive Financial Performance

Warner, Menachemi, and Brooks (2005) that surveyed all acute care hospitals in Florida. In the larger study, each Florida hospital's chief information officer (CIO) or equivalent employee was invited to participate in a questionnaire that was developed to collect information about IT use, barriers to IT adoption, and other IT and patient safety issues. Specific questions asked whether each hospital currently used a variety of technologies, including administrative, clinical, and strategic IT applications. Some questions were adapted, with formal permission, from the HIMSS leadership survey (2002). To ensure that every potentially available IT application was captured by the survey, an exhaustive literature review was conducted, discussions with experts were performed, and input from professional societies was gathered.

A list of all hospitals and CIO contact information was obtained from the Florida Hospital Association. Because the focus of the larger study was acute care hospitals, Veterans Affairs (VA) hospitals, state-owned psychiatric facilities, and subacute and specialty hospitals (e.g., pediatric hospitals) were originally excluded. A total of 198 acute care hospitals were included in the database. The survey contained both facility and individual respondent demographic questions. Prior to its use, the survey instrument was cognitively tested for clarity and readability with a panel of hospital IT experts and CIOs to establish face validity.

Overall, three mailings of the survey were sent between May and October 2003. As an incentive to participate, each CIO was offered a $50 honorarium to complete and return the questionnaire. Because the IT capabilities of rural hospitals are poorly understood in the literature (Calico et al. 2003), additional efforts were undertaken to ensure participation from the 29 acute care rural hospitals in the state. The protocol used was approved by the Florida State University institutional review board.

Hospital Financial Data Many Florida hospitals are required to submit financial reports to the AHCA on an annual basis. These financial reports, based on the Florida Hospital Uniform Reporting System, include fiscal year balance sheets, income statements, and a total of 27 worksheets representing all financial data submissions required by the agency. For the current study, AHCA provided the complete financial report for 2003 for each of the hospitals that participated in the hospital IT survey described above. The data were provided electronically in multiple Microsoft Excel files. In addition, AHCA provided a case-mix index. This index was calculated by AHCA for each hospital and represented the average patient severity of illness per hospital for 2003.

Variables and Measures
IT Variables In the hospital IT survey, specific questions were included to measure whether a given hospital had a myriad of individual IT applications. Broadly, these applications represented administrative, clinical (including patient safety), or strategic functions.
To operationalize hospital IT capabilities, we developed technology clusters by grouping individual IT applications based on one or more distinguishable elements. This method of grouping innovations is grounded in diffusion of innovation theory (Rogers 1995) and has been used frequently by researchers in this field (Burke et al. 2002; Burke and Menachemi 2004; Dorenfest 2000; Pare and Sicotte 2001). In all of these previous studies, each cluster was made up of individual IT applications whose primary purpose was to support that cluster's organizational purpose.

In the present study, individual IT applications were categorized as administrative, clinical, or strategic in nature. Administrative IT applications include such items as billing, payroll, and supply chain management information systems. Clinical systems represented applications designed to improve patient care and included pharmacy and laboratory information systems, computerized physician order entry (CPOE) systems, as well as electronic health records. Finally, strategic systems included such applications as managed care software, nurse staffing systems, and executive information systems. A list of all applications categorized by cluster appears in Table 1.

Next, in a method similar to the one used by Burke et al. (2002), each cluster was combined to form an index representing the count of actual IT applications in use for a given hospital under a given cluster. For example, the clinical index for a given hospital could range from 0 to 25. Zero would indicate that the hospital had no clinical applications available, whereas a score of 25 would indicate that the maximum number of clinical applications measured were available. In total, five indices were computed: one for each of the clusters (administrative, clinical, and strategic), one representing the total number of IT applications (i.e., the sum of the first three clusters), and a patient safety cluster. The patient safety cluster was made up of both clinical and strategic applications (from the clinical and strategic clusters) that are specifically designed to improve patient safety, reduce medical errors, or improve healthcare quality. The patient safety index was used in the performance group analysis (see below) and allowed for the examination of how patient safety—specific hospital applications are related to overall financial performance.

Financial Measures In analyzing the financial performance of healthcare organizations, several validated measures can be employed. Financial performance measures are expressed as ratios that indicate some aspect of the organization's financial performance relative to the components that generate them. In the current study, we used two major categories of financial performance for the analyses presented: one relating to the overall financial performance of the hospital, and the other reflecting the operational performance of the organization.

Briefly, overall financial performance measured hospitalwide indicators and included such measures
# Table 1

**IT Applications, by Cluster, Included in the Study**

<table>
<thead>
<tr>
<th>Clinical</th>
<th>Administrative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture archiving and communication systems</td>
<td>Benefits administration</td>
</tr>
<tr>
<td>Computerized physician order entry</td>
<td>Patient billing</td>
</tr>
<tr>
<td>Bar-coded medication management</td>
<td>Patient registration</td>
</tr>
<tr>
<td>Pharmacy information system</td>
<td>Payroll</td>
</tr>
<tr>
<td>Pharmacy dispensing</td>
<td>Personnel administration</td>
</tr>
<tr>
<td>Radiology information system</td>
<td>Time and attendance</td>
</tr>
<tr>
<td>Transcription</td>
<td>E-mail</td>
</tr>
<tr>
<td>Electronic health records</td>
<td>Two-way Web-based applications</td>
</tr>
<tr>
<td>Bioterrorism disease surveillance system</td>
<td>Customer relationship management or call center</td>
</tr>
<tr>
<td>Scheduling</td>
<td>Supply chain management</td>
</tr>
<tr>
<td>Chart deficiency</td>
<td>Encoder</td>
</tr>
<tr>
<td>Chart tracking or locator</td>
<td>Data repository</td>
</tr>
<tr>
<td>Abstracting</td>
<td>Credit or Collections</td>
</tr>
<tr>
<td>Critical care bedside</td>
<td>Electronic claims</td>
</tr>
<tr>
<td>Telemetry systems</td>
<td>Eligibility</td>
</tr>
<tr>
<td>Emergency department information system</td>
<td>Scheduling</td>
</tr>
<tr>
<td>Laboratory information system</td>
<td>General ledger</td>
</tr>
<tr>
<td>Medical record imaging</td>
<td>Accounts payable</td>
</tr>
<tr>
<td>Medical or surgical bedside terminals</td>
<td>Master patient (person) index</td>
</tr>
<tr>
<td>Nurse charting or care planning</td>
<td>Materials management</td>
</tr>
<tr>
<td>Operating room</td>
<td>Premium billing</td>
</tr>
<tr>
<td>Order communication results</td>
<td></td>
</tr>
<tr>
<td>Clinical decision support system</td>
<td></td>
</tr>
<tr>
<td>Clinical data repository</td>
<td></td>
</tr>
<tr>
<td>Scanning clinical documents</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Strategic</th>
<th>Patient Safety*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outcomes and quality management</td>
<td>Computerized physician order entry</td>
</tr>
<tr>
<td>Case-mix analysis</td>
<td>Electronic health records</td>
</tr>
<tr>
<td>Managed care software</td>
<td>Bar-coded medication management</td>
</tr>
<tr>
<td>Managed care contract management</td>
<td>Pharmacy information system</td>
</tr>
<tr>
<td>Cost accounting</td>
<td>Pharmacy dispensing</td>
</tr>
<tr>
<td>Executive information system</td>
<td>Clinical decision support system</td>
</tr>
<tr>
<td>Flexible budgeting</td>
<td>Outcomes and quality management</td>
</tr>
<tr>
<td>Enterprise resource planning systems</td>
<td>Nurse staffing</td>
</tr>
<tr>
<td>Nurse staffing information system</td>
<td>Personal digital assistants (PDAs)</td>
</tr>
<tr>
<td>Business intelligence or decision support systems (e.g., data warehouse)</td>
<td>Automated alerts or paging to clinicians</td>
</tr>
</tbody>
</table>

*Patient safety IT applications are comprised of select clinical and strategic IT applications.
as ROA, cash flow ratio, operating margin, and total margin. These measures reflect the performance of all aspects of the hospital. Operational performance was measured using a variety of ratios, including net inpatient revenue, net patient revenue, operating income, total income, hospital expenses, and total expenses. These ratios are more closely tied to clinical performance and efficiency than to hospital performance. The values used to calculate each of these measures were extracted from the AHCA financial reports.

To control for hospital bed size as accurately as possible operational performance ratios were divided by the number of available patient beds per day to show revenues or expenses in relation to each available patient bed per day. This method was selected because it controls for bed size within the ratio rather than having an external measure added to the model, which would comprise statistical power given the sample size. To account for days, we divided by 364 because that is the actual number of days between the beginning and end dates represented by the financial data.

**Statistical Analysis**

Using descriptive statistics, we examined financial performance measures, operational performance measures, and measures of IT use relative to hospital status (not-for-profit/for-profit), system affiliation, and location (rural/urban). Differences between hospitals in different categories with respect to these measures were evaluated using independent sample t-tests.

The distributions for net inpatient revenue, net patient revenue, hospital expenses, and total expenses (all measures per bed per day) were transformed using a natural logarithm prior to analyses. The untransformed values for all variables are presented for descriptive purposes.

The relationships between each type of IT use (clinical, administrative, and strategic), as well as an aggregated measure of all IT use, were examined using multiple linear regression analysis for the ratios listed above. Because severity of illness (case mix) can have a pronounced effect on most measures of financial and operational performance, each model was specified to include case mix as a covariate. Because of the relatively limited number of hospitals in the dataset, we did not develop more complex multivariate models that would involve additional variables. Moreover, preliminary analyses indicated a substantial level of correlation among the IT variables. To avoid violating the assumptions of regression analysis with multicollinearity, our individual models did not include a simultaneous examination of all IT clusters as measured by each IT index.

Other operational performance measures (operational income per bed per day, total income per bed per day) and all financial performance measures (ROA, cash flow ratio, operating margin, operating margin ROA, and total margin) had excessive variation relative to the mean. Additionally, in some cases expenses exceeded revenues and negative margins resulted. Because each of these ratios included
a potentially negative total margin (which occurred in 28 percent of hospitals) or negative operating margin (which occurred in about 39 percent of hospitals), the normalization of the distribution of ratios by means of standard data transformation techniques (natural log, power, square root, inverse, and other normalization algorithms) could not be achieved. In these situations, rather than dropping observations (and further limiting sample size) that showed unusual behavior to achieve the degree of normality required for regression analyses, we modified our analytical approach.

For the study of these financial ratios, organizations were divided into two groups: one for hospitals having positive values for the performance ratios (positive performers), and one for hospitals with negative performance ratios (negative performers). This permitted comparison of hospitals having a positive margin (making money) with those hospitals having a negative margin (losing money) in terms of the mean IT use for that year. Operating margin and total margin were the numerators in most financial ratios used in this analysis. A negative operating margin or total margin value functionally resulted in grouping hospitals as negative performers regardless of the degree of loss they incurred. Consequently, the financial and operational performance ratios calculated from these margins were reclassified into one of three primary ratio groups: those based on total margin, on operating margin, and on cash flow.

**RESULTS**

**Sample Description**

Of the 198 hospitals surveyed by the hospital IT questionnaire, 98 responses (49 percent) were initially available. After matching financial reports obtained from AHCA to hospitals available for the IT study, a total of 82 useable hospitals (83.6 percent) made up the dataset. Fifteen hospitals were excluded because their financial reports were either not available at the time of the study or were included with another affiliated hospital facility (usually part of the same hospital system). In the latter case, both hospitals were excluded because their financial information was too integrated and indistinguishable to be associated with a single hospital location.

Hospital characteristics of these participating facilities are as follows. The 82 Florida hospitals used in the analysis had a wide dispersion of available staffed inpatient beds (mean = 268, standard deviation [SD] = 306, median = 154, interquartile range = 303). Sixty hospitals (73 percent) were part of a multihospital system, and 22 (27 percent) were stand-alone facilities. Twenty-five hospitals (30 percent) were rural, and the majority of hospitals (71 percent) were not-for-profit.

**Descriptive Analyses**

We initially examined each financial outcome variable and IT index in relation to each of the dichotomous hospital demographic variables (rural vs. urban, not-for-profit vs. for-profit, system vs. stand-alone). This allowed for an assessment of how hospitals
of varying types differed with respect to both financial performance and IT adoption prior to examining the effect of IT on hospital performance among all hospitals. The descriptive analyses for financial performance measures, operational measures, and IT indices are as follows.

**Financial Performance Measures** Significant differences between system-affiliated and stand-alone hospitals were observed for all financial performance measures (see Table 2). Hospitals belonging to a system had significantly higher average levels of financial performance than stand-alone hospitals. Among the other variables (rural versus urban, not-for-profit versus for-profit), no other statistically significant differences in financial measures were observed.

**Operational Performance Measures** Relative to for-profit hospitals, not-for-profits had significantly higher relative average hospital expenses and total expenses for each bed per day (see Table 3). System-affiliated hospitals had significantly higher mean total income and net inpatient revenue (both measures per bed per day) than stand-alone hospitals. In comparison with urban hospitals, rural hospitals had significantly lower net inpatient revenue, net patient revenue, hospital expenses, and total expenses (all measures per bed per day). No other significant differences were found between the groups examined. Lastly, because of missing data, three hospitals were excluded from the analysis involving net inpatient revenue.

**IT Indices** The only measure of IT use in not-for-profit hospitals that was not significantly greater than that in for-profit hospitals was clinical IT systems (see Table 4). All other IT measures (administrative IT, strategic IT, and all IT) showed a significantly higher level of use in not-for-profit hospitals. System-affiliated hospitals showed a significantly higher level of use than stand-alone hospitals only in strategic IT. Across all measures IT use was statistically significantly greater in urban hospitals than in rural hospitals.

**Statistical Analyses**

**Regression Analysis** Regression analyses were used to examine the effects of IT adoption and case mix on the four operational performance measures. In all models, the use of IT and severity of illness (case mix) measures accounted for a significant proportion ($p < .05$) of explained variance for these ratios, with the adjusted $R^2$ for each analysis ranging from .26 to .45 (see Table 5). The adjusted $R^2$ ranges from 0 to 1 and represents the variability of the model that can be accounted for by the combined effects of all variables in the model. After controlling for the other variable, both IT use and case mix were significantly related to the operational measure being examined in that model.

In the clinical IT example (see Table 4), holding case mix constant, clinical IT was found to be associated with a statistically significant increase in inpatient revenue (per bed per day).
### TABLE 2
Financial Performance Measures by Hospital Type

<table>
<thead>
<tr>
<th>Hospital Type</th>
<th>Return on Assets&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Cash Flow Ratio&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Operating Margin&lt;sup&gt;c&lt;/sup&gt;</th>
<th>Operating Return on Assets&lt;sup&gt;d&lt;/sup&gt;</th>
<th>Total Margin&lt;sup&gt;e&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>0.02</td>
<td>0.07</td>
<td>0.004</td>
<td>-0.0002</td>
<td>0.02</td>
</tr>
<tr>
<td>SD</td>
<td>0.13</td>
<td>0.13</td>
<td>0.11</td>
<td>0.14</td>
<td>0.10</td>
</tr>
<tr>
<td>N</td>
<td>82</td>
<td>82</td>
<td>82</td>
<td>82</td>
<td>82</td>
</tr>
<tr>
<td>Not-for-profit</td>
<td>0.03</td>
<td>0.08</td>
<td>-0.01</td>
<td>-0.02</td>
<td>0.03</td>
</tr>
<tr>
<td>SD</td>
<td>0.11</td>
<td>0.10</td>
<td>0.11</td>
<td>0.14</td>
<td>0.08</td>
</tr>
<tr>
<td>N</td>
<td>58</td>
<td>58</td>
<td>58</td>
<td>58</td>
<td>58</td>
</tr>
<tr>
<td>For-profit</td>
<td>-0.0007</td>
<td>0.05</td>
<td>0.04</td>
<td>0.04</td>
<td>0.01</td>
</tr>
<tr>
<td>SD</td>
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<td>0.17</td>
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<td>0.11</td>
<td>0.13</td>
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<tr>
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<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>System-affiliated</td>
<td>0.04&lt;sup&gt;*&lt;/sup&gt;</td>
<td>0.09&lt;sup&gt;*&lt;/sup&gt;</td>
<td>0.03&lt;sup&gt;**&lt;/sup&gt;</td>
<td>0.03&lt;sup&gt;**&lt;/sup&gt;</td>
<td>0.04&lt;sup&gt;*&lt;/sup&gt;</td>
</tr>
<tr>
<td>SD</td>
<td>0.14</td>
<td>0.14</td>
<td>0.09</td>
<td>0.11</td>
<td>0.10</td>
</tr>
<tr>
<td>N</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Stand-alone</td>
<td>-0.04</td>
<td>0.01</td>
<td>-0.07</td>
<td>-0.08</td>
<td>-0.03</td>
</tr>
<tr>
<td>SD</td>
<td>0.09</td>
<td>0.08</td>
<td>0.12</td>
<td>0.17</td>
<td>0.07</td>
</tr>
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<td>22</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>Rural</td>
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<td>0.03</td>
<td>-0.03</td>
<td>-0.06</td>
<td>-0.01</td>
</tr>
<tr>
<td>SD</td>
<td>0.20</td>
<td>0.19</td>
<td>0.13</td>
<td>0.19</td>
<td>0.13</td>
</tr>
<tr>
<td>N</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Urban</td>
<td>0.04</td>
<td>0.09</td>
<td>0.02</td>
<td>0.02</td>
<td>0.04</td>
</tr>
<tr>
<td>SD</td>
<td>0.09</td>
<td>0.09</td>
<td>0.10</td>
<td>0.10</td>
<td>0.08</td>
</tr>
<tr>
<td>N</td>
<td>57</td>
<td>57</td>
<td>57</td>
<td>57</td>
<td>57</td>
</tr>
</tbody>
</table>

<sup>a</sup>Return on assets = net income/total assets; for example, in the mean value for total hospitals, net income increases by $0.02 for each $1 increase in total assets.

<sup>b</sup>Cash flow ratio = (net income + depreciation + amortization)/total assets; for example, in total hospitals, cash flow increases by $0.07 for each $1 increase in total assets.

<sup>c</sup>Operating margin = operating income/total operating revenue; for example, in total hospitals, operating income increases by $0.004 for each $1 increase in operating revenue.

<sup>d</sup>Operating return on assets = operating income/total assets; for example, in total hospitals, operating income decreases by $0.0002 for each additional $1 of total assets.

<sup>e</sup>Total margin = net income/(total operating revenue + nonoperating revenue); for example, in total hospitals, net income increases by $0.02 for every $1 increase in total revenue.

<br/>

<sup>*</sup><i>p < .05.</i>

<sup>**p < .001.</i>
TABLE 3
Operational Performance Measures (in Dollars) by Hospital Type (Per Bed Per Day)

<table>
<thead>
<tr>
<th>Hospital Type</th>
<th>Net Inpatient Revenue(^a)</th>
<th>Net Patient Revenue(^b)</th>
<th>Operating Income(^c)</th>
<th>Total Income(^d)</th>
<th>Hospital Expenses(^e)</th>
<th>Total Expenses(^f)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>718.81</td>
<td>1,266.64</td>
<td>28.88</td>
<td>56.75</td>
<td>189.98</td>
<td>1,290.23</td>
</tr>
<tr>
<td>SD</td>
<td>344.50</td>
<td>817.03</td>
<td>139.87</td>
<td>138.39</td>
<td>82.89</td>
<td>769.62</td>
</tr>
<tr>
<td>N</td>
<td>79</td>
<td>82</td>
<td>82</td>
<td>82</td>
<td>82</td>
<td>82</td>
</tr>
<tr>
<td>Not-for-profit</td>
<td>744.22</td>
<td>1,368.84</td>
<td>15.25</td>
<td>65.10</td>
<td>202.20*</td>
<td>1,409.51*</td>
</tr>
<tr>
<td>SD</td>
<td>361.05</td>
<td>927.63</td>
<td>151.35</td>
<td>143.42</td>
<td>87.00</td>
<td>867.12</td>
</tr>
<tr>
<td>N</td>
<td>55</td>
<td>58</td>
<td>58</td>
<td>58</td>
<td>58</td>
<td>58</td>
</tr>
<tr>
<td>For-profit</td>
<td>660.58</td>
<td>1,019.65</td>
<td>61.82</td>
<td>36.59</td>
<td>160.44</td>
<td>1,001.98</td>
</tr>
<tr>
<td>SD</td>
<td>302.20</td>
<td>358.29</td>
<td>102.61</td>
<td>126.00</td>
<td>64.45</td>
<td>316.23</td>
</tr>
<tr>
<td>N</td>
<td>24</td>
<td>24</td>
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<td>24</td>
<td>24</td>
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</tr>
<tr>
<td>System-affiliated</td>
<td>761.99</td>
<td>1,251.71</td>
<td>48.92</td>
<td>76.55*</td>
<td>194.34</td>
<td>1,253.15</td>
</tr>
<tr>
<td>SD</td>
<td>314.16</td>
<td>479.64</td>
<td>128.04</td>
<td>132.45</td>
<td>82.47</td>
<td>470.64</td>
</tr>
<tr>
<td>N</td>
<td>57</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Stand-alone</td>
<td>606.93</td>
<td>1,307.35</td>
<td>–25.79</td>
<td>2.75</td>
<td>178.08</td>
<td>1,391.38</td>
</tr>
<tr>
<td>SD</td>
<td>399.29</td>
<td>1,387.84</td>
<td>158.48</td>
<td>142.86</td>
<td>84.80</td>
<td>1,283.61</td>
</tr>
<tr>
<td>N</td>
<td>22</td>
<td>22</td>
<td>22</td>
<td>22</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>Rural</td>
<td>433.61**</td>
<td>986.14*</td>
<td>–8.36</td>
<td>13.34</td>
<td>132.95**</td>
<td>1,073.03</td>
</tr>
<tr>
<td>SD</td>
<td>255.07</td>
<td>521.96</td>
<td>120.01</td>
<td>156.13</td>
<td>68.51</td>
<td>517.07</td>
</tr>
<tr>
<td>N</td>
<td>22</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
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</tr>
<tr>
<td>Urban</td>
<td>828.89</td>
<td>1,389.66</td>
<td>45.21</td>
<td>75.79</td>
<td>214.99</td>
<td>1,385.50</td>
</tr>
<tr>
<td>SD</td>
<td>310.83</td>
<td>893.46</td>
<td>145.72</td>
<td>126.67</td>
<td>76.41</td>
<td>843.71</td>
</tr>
<tr>
<td>N</td>
<td>57</td>
<td>57</td>
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<td>57</td>
<td>57</td>
<td>57</td>
</tr>
</tbody>
</table>

\(^a\)Net inpatient revenue per bed per day = \([(\text{inpatient services revenue} – \text{total inpatient deductions from revenue})/\text{available beds}]\)/364; \(N\) for this measure reflects missing inpatient deductions from revenue for three hospitals.

\(^b\)Net patient revenue per bed per day = \[(\text{net patient care revenue}/\text{available beds})]/364; excludes nonoperating revenue.

\(^c\)Operating income per bed per day = \[(\text{operating margin}/\text{available beds})]/364.

\(^d\)Total income per bed per day = \[(\text{total margin}/\text{available beds})]/364.

\(^e\)Hospital expenses per bed per day = \[(\text{daily hospital services total expense}/\text{available beds})]/364.

\(^f\)Total expenses per bed per day = \[(\text{total operating expense} + \text{nonoperating expense})/\text{available beds}]\)/364.

\(p < .05\)

\(**p < .001\)
<table>
<thead>
<tr>
<th>Hospital Type</th>
<th>Clinical Index</th>
<th>Administrative Index</th>
<th>Strategic Index</th>
<th>Sum of IT Indices</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>11.79</td>
<td>15.88</td>
<td>5.17</td>
<td>32.84</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>5.33</td>
<td>4.43</td>
<td>2.72</td>
<td>11.20</td>
</tr>
<tr>
<td>N</td>
<td>82</td>
<td>82</td>
<td>82</td>
<td>82</td>
</tr>
<tr>
<td><strong>Not-for-profit</strong></td>
<td>12.43</td>
<td>16.83*</td>
<td>5.69*</td>
<td>34.95*</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>5.20</td>
<td>3.57</td>
<td>2.63</td>
<td>10.27</td>
</tr>
<tr>
<td>N</td>
<td>58</td>
<td>58</td>
<td>58</td>
<td>58</td>
</tr>
<tr>
<td><strong>For-profit</strong></td>
<td>10.25</td>
<td>13.58</td>
<td>3.92</td>
<td>27.75</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>5.42</td>
<td>5.44</td>
<td>2.57</td>
<td>11.94</td>
</tr>
<tr>
<td>N</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td><strong>System-affiliated</strong></td>
<td>12.32</td>
<td>16.32</td>
<td>5.63*</td>
<td>34.27</td>
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<tr>
<td>Mean</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>SD</td>
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<td>4.65</td>
<td>2.46</td>
<td>10.76</td>
</tr>
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<td>N</td>
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<td>60</td>
<td>60</td>
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<tr>
<td><strong>Stand-alone</strong></td>
<td>10.36</td>
<td>14.68</td>
<td>3.91</td>
<td>28.95</td>
</tr>
<tr>
<td>Mean</td>
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</tr>
<tr>
<td>SD</td>
<td>6.06</td>
<td>3.59</td>
<td>3.05</td>
<td>11.71</td>
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<td>N</td>
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<td>22</td>
<td>22</td>
</tr>
<tr>
<td><strong>Rural</strong></td>
<td>8.00**</td>
<td>14.20*</td>
<td>3.64*</td>
<td>25.84**</td>
</tr>
<tr>
<td>Mean</td>
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<tr>
<td>SD</td>
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<td>11.75</td>
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<td>25</td>
</tr>
<tr>
<td><strong>Urban</strong></td>
<td>13.46</td>
<td>16.61</td>
<td>5.84</td>
<td>35.91</td>
</tr>
<tr>
<td>Mean</td>
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</tr>
<tr>
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<td>4.27</td>
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<td>9.53</td>
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<td>N</td>
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<td>57</td>
</tr>
</tbody>
</table>

Note: Each index represents the count of total IT applications studied that were available at each hospital for a given technology cluster. Maximum number of clinical applications was 25, administrative was 21, and strategic was 10. The sum of all IT indices is out of a total of 56.

*p < .05.

**p < .001.

(p < .05). Because the revenue and expense data had to be transformed, the magnitude of the increase is not reflected by the values shown in Table 4. Rather, these values indicate the direction (positive or negative) and significance of the relationship to the outcome ratio relative to the other variable. As indicated by the standardized coefficients, the relationships between case mix and the performance measures were stronger...
TABLE 5
Effects of Case Mix and IT Use on Operational Performance Measures (Per Bed Per Day)

<table>
<thead>
<tr>
<th>Index</th>
<th>Inpatient Revenue</th>
<th>Net Patient Revenue</th>
<th>Hospital Expenses</th>
<th>Total Expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical IT</td>
<td>.24*</td>
<td>.36**</td>
<td>.01**</td>
<td>.29*</td>
</tr>
<tr>
<td>Case mix</td>
<td>.54**</td>
<td>.39**</td>
<td>.16**</td>
<td>.37**</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>.440**</td>
<td>.384**</td>
<td>.354**</td>
<td>.305**</td>
</tr>
<tr>
<td>Administrative IT</td>
<td>.21*</td>
<td>.30**</td>
<td>.22*</td>
<td>.22*</td>
</tr>
<tr>
<td>Case mix</td>
<td>.60**</td>
<td>.48**</td>
<td>.48**</td>
<td>.46**</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>.433**</td>
<td>.367**</td>
<td>.304**</td>
<td>.282**</td>
</tr>
<tr>
<td>Strategic IT</td>
<td>.19*</td>
<td>.23*</td>
<td>.25*</td>
<td>.19*</td>
</tr>
<tr>
<td>Case mix</td>
<td>.43**</td>
<td>.46**</td>
<td>.43**</td>
<td>.43**</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>.428**</td>
<td>.327**</td>
<td>.314**</td>
<td>.266**</td>
</tr>
<tr>
<td>Sum of IT indices</td>
<td>.25*</td>
<td>.35**</td>
<td>.31**</td>
<td>.27*</td>
</tr>
<tr>
<td>Case mix</td>
<td>.55**</td>
<td>.41**</td>
<td>.40**</td>
<td>.40**</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>.447**</td>
<td>.386**</td>
<td>.343**</td>
<td>.300**</td>
</tr>
</tbody>
</table>

Note: The value in each cell is the standardized partial regression coefficient. The value indicates the direction (positive or negative) and significance of the relationship to the outcome ratio relative to the other variable in the model. The adjusted $R^2$ represents the proportion of variance in the ratio that is explained by the variables in the model; for example, clinical IT use and case mix, both being significant predictors, together account for 44 percent of the variance observed for inpatient revenue (per bed per day).

* $p < .05$.
** $p < .001$.

than the relationships between IT use and the performance measures. In all models, both IT use and case mix were associated with higher levels of both revenues and expenses.

Performance Group Analysis   Analyses showed that positive performers relative to negative performers in each financial group had significantly higher mean levels of patient severity (see Table 6). In addition, for all financial performance groups positive performers invariably had higher mean values for every IT measure.

For example, when considering the total margin group using one-tailed significance tests, positive performers (those with positive total margin) had on average 2.8 more clinical IT applications (12.6 vs. 9.8, $p = .0325$), 2.3 more administrative IT applications (16.5 vs. 14.2, $p = .037$), 1.3 more strategic IT applications (5.5 vs. 4.2, $p = .0235$), and 6.4 more total IT applications (34.6 vs. 28.2, $p = .0215$) than negative performers. Additionally, facilities that had positive operating margin had on average 2.3 more clinical IT applications (12.7 vs. 10.4,
**Table 6**

*IT Adoption by Financial Performance Group*

<table>
<thead>
<tr>
<th>Financial Performance Group</th>
<th>N</th>
<th>Case Mix</th>
<th>Clinical IT</th>
<th>Administrative IT</th>
<th>Strategic IT</th>
<th>Patient Safety IT</th>
<th>Sum of IT Indices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Margin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive performers</td>
<td>59</td>
<td>1.26*</td>
<td>12.56*</td>
<td>16.54*</td>
<td>5.54*</td>
<td>4.73</td>
<td>34.64*</td>
</tr>
<tr>
<td>Negative performers</td>
<td>23</td>
<td>1.09</td>
<td>9.83</td>
<td>14.17</td>
<td>4.22</td>
<td>3.78</td>
<td>28.22</td>
</tr>
<tr>
<td>Operating Margin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive performers</td>
<td>50</td>
<td>1.27*</td>
<td>12.70*</td>
<td>16.84*</td>
<td>5.62*</td>
<td>4.58</td>
<td>35.16*</td>
</tr>
<tr>
<td>Negative performers</td>
<td>32</td>
<td>1.13</td>
<td>10.38</td>
<td>14.38</td>
<td>4.47</td>
<td>4.28</td>
<td>29.22</td>
</tr>
<tr>
<td>Cash Flow Ratio</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive performers</td>
<td>68</td>
<td>1.26**</td>
<td>12.54*</td>
<td>16.31*</td>
<td>5.53*</td>
<td>4.78*</td>
<td>34.38*</td>
</tr>
<tr>
<td>Negative performers</td>
<td>14</td>
<td>0.98</td>
<td>8.14</td>
<td>13.79</td>
<td>3.43</td>
<td>2.93</td>
<td>25.36</td>
</tr>
</tbody>
</table>

*Note: Positive performers had positive operating or total margin values; negative performers had negative operating or total margin values.*

\* \( p < .05 \)

\** \( p < .001 \)

Although positive-performing hospitals also had higher mean levels of patient safety IT use than negative-performing hospitals for the total and operating margin groups, these differences were not statistically significant.

**Discussion**

In today's healthcare environment, determining the value of IT investments has become a particularly important exercise for healthcare leaders. Health IT has been linked to numerous organizational and clinical benefits that are both tangible and intangible. Nevertheless, healthcare entities have found it difficult to systematically conduct ROI analyses for many IT applications.
particularly hospitalwide IT systems that improve efficiency but do not necessarily produce direct revenues. As a result, the current research took a macro-level approach to understand the relationship between IT adoption and hospital financial performance.

Our findings illuminate a positive and significant relationship between IT use and numerous measures of financial performance across Florida hospitals. This positive and significant relationship was still present when adjusting for case mix and accounting for bed size in the outcome variables. Interestingly, regardless of the analysis or method used, the results indicated that IT adoption was consistently related to improved financial outcomes both overall and operationally. This finding was present when examining IT collectively and for clinical IT, administrative IT, and strategic IT as individual measures. Lastly, it should be noted that although higher IT use was associated with a higher level of each outcome ratio based on revenues, income, or cash flow, higher IT use was also associated with ratios based on higher expenses. This probably accounts for the relatively high acquisition costs associated with obtaining and maintaining sophisticated IT systems.

The relationship between IT and financial performance is complex, and some existing literature does not support the findings of the current study. For example, early work in industry (Strassman 1990) found no relationship between organizational performance and investments in IT. Additional evidence from outside the healthcare industry suggests that investments in IT do not guarantee positive outcomes and could actually deteriorate organizational performance (Olazabal 2002). Moreover, the benefits of IT investment may be secondary to the benefits associated with changes in business processes that may be accompanied by adoption of technologies (Brown and Hagel 2003).

Nevertheless, based on models from the business world (Bakos and Treacy 1986; Bharadwaj 2000; Byrd and Davidson 2003; Kohli and Devaraj 2004) and the logic that organizations with more resources (i.e., IT capabilities) are expected to perform better financially (Barney 1991; Conner and Sobol 1991), we believe that increased IT use influenced financial performance, not vice versa, in our sample of Florida hospitals.

We realize that the current study had a nonexperimental, retrospective, cross-sectional design and therefore cannot detect causality. Other explanations may also exist for the findings we present. For example, organizations with poor financial performance may fail to invest in IT because of a lack of capital. Additionally, organizations with strong financial performance have, among other factors, better management, which in turn may influence the decision to adopt IT.

In the present study, we merely identified the relationship between IT and financial value and cannot determine which came first—IT or positive performance. However, the relationship revealed in the present analysis may underestimate the strength of association between hospital IT use and financial performance. This may
be true because by design our survey methodology measured whether a given IT application was present at a given hospital, not how frequently it was used. The relationship between IT and improved financial outcomes would be even stronger had we examined actual use of IT, not just the availability of IT applications. Moreover, we did not rank the relative importance of any particular IT application over another. Doing so in the future may assist in determining which, if any, IT applications correlate with positive financial outcomes.

Other limitations of the study include the fact that our data were limited to 83 hospitals, or approximately 40 percent of all acute care facilities in the state. Sample size and response rate may be a limitation. Additionally, by design our study examined only acute care hospitals; generalizability to other types of healthcare settings must be undertaken with caution.

CONCLUSION
Our findings demonstrate that financial value was associated with IT adoption in Florida hospitals. This provides evidence of the relationship between IT and improved performance that has been suggested in a well-known series of Institute of Medicine reports (IOM 2001; Kohn, Corrigan, and Donaldson 2000). Future research should expand the present analysis of value to be broader than financial performance. Specifically, the correlation between overall IT use and quality of care and patient safety outcomes in hospitals should be studied so that this complex relationship can be clarified. In the meantime, given that a true ROI is so difficult to obtain for many individual hospitalwide IT systems, our data can serve as a proxy for hospital leaders and policymakers who want to understand the potential financial effects of investing in IT.

References


Evidence from a Logitudinal Study.”


MIS Quarterly 28 (2): 283–322.


During the course of my professional experience, I have had the privilege of working with acute care facilities that span the array of those studied by the authors: not-for-profit and for-profit, rural and urban, system-affiliated and stand-alone. As one might imagine, the financial performance of those organizations has ranged from what the authors would term positive to the negative and beyond. One of the tenets that I have always believed but never had the ability to fully substantiate has been empirically addressed in the authors’ timely research: The adoption of IT is consistently related to improved financial performance in acute care organizations. Although the concept seems intuitive, the wide disparity of IT adoption in the healthcare industry and the large gap between healthcare and other industries has created a need for research like the authors’.

Much has been written on the differences in the adoption of IT between healthcare and other industries. Although that topic continues to make for relevant research and debate, the authors’ research points to the realities associated with widespread differences in adoption of technology within our industry. The fact that the higher performing organizations in the study without fail showed higher levels of IT adoption is a clanging bell to those organizations that have lagged behind the standards of our industry.

The implications for a capital-starved industry are enormous. With such a direct correlation between the adoption of IT and financial success, organizations without the financial ability, and presumably limited access to capital, to invest in appropriate technologies are at risk of falling further into a downward spiral of poor performance. As a result, the gap between the haves and the have-nots in our industry will grow.

That said, the mere adoption of technology is no guarantee of financial success. This research indicates that those who adopted technology showed consistently better financial incomes, but without the appropriate people and processes to use and leverage technology, tools such as those identified by the authors have limited value. Technology is a tool that must complement and enhance the underlying
clinical and business processes for which those tools are designed. When tools go underutilized or inappropriately utilized, the benefits should not be expected to materialize. Additionally, without the appropriate commitment to staff training on the optimal use of technology, the return on those investments will never be fully achieved. Said another way, organizations must not only adopt technology but also adapt it into business processes and become adept users of its functionality.

The adoption of IT without a commitment to its optimal utilization may even erode the financial performance of an organization. For example, a number of organizations have invested in state-of-the-art clinical systems, such as bedside pharmacy and lab order entry, and data management systems. It is quite likely that these tools were purchased with high hopes and reasoned justification of increased patient safety, operational efficiency, and financial improvement. However, a myriad of issues related to optimal implementation led to lackluster adaptation or altogether abandonment of the technology. In some cases, adequate and broad-based staff training was not provided. In others, the end users failed to integrate the technology into their daily routines or adapt them to leverage the benefits of the technology. The end results are that the returns promised in terms of increased safety and efficiency never materialize. Meanwhile, the acquisition costs are not recoverable, and ongoing maintenance and service agreements continue to weigh on the financial results of the organization.

I agree with the authors’ comment that further research is warranted to expand the concept of value beyond financial performance. I would encourage the authors, the research community, and our industry as a whole to study the relative value of certain types of information systems within and across the broad categories addressed in this study. For example, does the successful adoption of a cost accounting system create more or less value, relatively speaking, than that of a supply chain management system? Such an analysis would take a next logical step in moving from a macro- to a micro-level understanding of the benefits of investing in IT.

The study makes a compelling case for the adoption of IT by acute care providers. Although the authors note the limitations of such a macro-level analysis, the findings provide senior executives, board members, and other key decision makers with a degree of comfort that those difficult decisions regarding the investment in technology may set them apart from their competition.
ORGANIZATIONAL INFORMATION
The organization in this case, A Health System (AHS), owns three acute care hospitals with a combined capacity of 596 acute beds. It has another 350 long-term care beds in three convalescent hospitals. AHS has approximately 2,000 full-time employees.

AHS is a comprehensive community health system offering complete acute and convalescent services. It offers obstetrical services with perinatology and neonatology care. The organization has all surgical specialties, including cardiovascular, neurosurgery, and orthopedics. Management is decentralized, with each acute facility having a president and each convalescent facility having an administrator.

AHS is a community-owned, voluntary, tax-exempt 501(c)(3) organization. The organization has a 15-member board that is self-perpetuating. The executive committee of the board selects new board member candidates from the community, and the membership then votes annually. Each board member serves a term of three years. There are five board seats up for reelection each year. Organizational membership is based on donations to the organization. Anyone in the community who has donated $100 or more at any time becomes a voting member. The board has several standing committees: the executive committee (EC), corporate affairs and audit committee (CAAC), financial and planning committee, and professional affairs committee.

The system is the result of the 1982 merger of three freestanding, community voluntary tax-exempt hospitals. Each hospital contributed five board members to the newly formed board, with all assets and liabilities being combined.

AHS’s three hospitals—X (350 beds), Y (66 beds), and Z (180 beds)—are within 15 miles of one another. The county, or primary service area, consists of approximately 750,000 to 850,000 people within a 60-mile radius of the system. There are two major cities: City A has a population of more than 300,000, growing at a rate of 2 percent per year; City B has a population of more than 60,000, growing at 8 percent per year. The metro area has a much larger population, as City A has many county, unincorporated areas. Within a radius of 20 miles live 500,000 people, with numerous smaller rural communities adjacent to the metro area. Hospitals X and Y are in City A; Hospital Z is in City B. The economic base is primarily agricultural, with a large state university on the border of City A, adjacent to City B. It is important to note that demographically, residents of City B are...
Caucasian and second-generation Hispanic, well-educated, high achievers with a high proportion of those of childbearing age.

City A has a 250-bed full-service hospital, St. Religion, affiliated with a national religious order; a 110-bed federal government hospital; another 200-bed full-service county government hospital; and a 150-bed children’s hospital. In the 60-mile radius of the county are five small rural hospitals serving primary care needs of the surrounding smaller cities. The two government hospitals have residency programs and are part of the state university medical education system.

**BRIEF STATEMENT OF THE PROBLEM**

It was necessary to specifically define a procedure for the evaluation of the board of directors by its members and a self-assessment by each member of individual performance as a board member. This process needed to be designed to solicit each board member’s opinion of his individual effectiveness as a board member and perception of the effectiveness of the full board and its committees.

**DESCRIPTION OF THE PROBLEM**

**Background**

Each year, the EC is required to recommend five board members to serve three-year terms on the general board. These board nominees are then voted on by the general membership at the annual meeting. Up to this point, the process was purely subjective and at the discretion and whim of the members of the EC. The EC requested that a more objective evaluation be available for review of existing board members. This was driven primarily by the ever-increasing pressure being placed on community health systems to meet the increasing demands of their populations.

Resources were shrinking: Diminishing labor pools for technical and licensed personnel, reduced availability of capital, and declining reimbursements were issues with which every board was struggling. Because the board members were being asked to take on a greater role in providing direction in difficult times, the EC hoped to have data available to them to ensure that they were recommending the reelection of effective board members. New board members were generally elected only when a past board member no longer desired to serve, died, or fell out of favor with his or her colleagues for some reason. An objective evaluation of existing board members was therefore desirable.

**Evolving Complexity**

The system CEO did not want to personally do the evaluations, which he saw as political suicide. He therefore asked the corporate affairs committee to determine the best way to gather evaluative data for the EC. The board members of the system were all successful, powerful, and influential people in the community. Addressing shortcomings was going to be difficult.
Persons and Groups Involved
I was the president of Hospital Z and the executive staff member assigned to support the CAAC of the board. It was my assignment to recommend the design and implementation of an evaluation process for the general board. The persons with whom I worked most closely on this assignment were the system CEO, chairman of the general board, chairman of the CAAC, and corporate legal counsel. The EC and CAAC were also helpful in providing feedback and ultimately supported and approved my recommendation.

ADMINISTRATIVE DECISIONS
Contemplating the establishment of the review process raised a number of key questions:

• How do we as a system approach this project with as much sensitivity as possible without alienating any of the board members?
• As we come up with the evaluation criteria, how do we make sure none of the board members feel that questions were designed specifically for them?
• How do we obtain buy-in from the EC, CAAC, and eventually the full board?
• How do I accomplish this and avoid alienating myself from any of the board members?
• How do we tell a successful member of the community that he is not doing what he should be doing as a board member, in an evaluation?
• How do we evaluate the board as a whole and the individual board members?
• When should the individual and group evaluations occur?
• Who should review the evaluation with the individual board member?
• How should the evaluation of the board as an entity be conducted?
• Who should monitor the process for effectiveness, objectivity, and fairness?

These questions dictated the following decisions:

1. Establish the expectations and characteristics the board has for a good board member and for itself as a whole.
   a. Survey each member of the EC and CAAC to obtain their input on the proper expectations and characteristics for a board member.
   b. Gather the information gained from the EC and CAAC into a summary and distribute it to the full board for additions, corrections, and deletions.
2. Design evaluation instruments.
   a. Formulate the expectations and criteria into questions that can be quantifiably answered.
   b. Offer ranges of performance.
3. Set the annual planning “advance” as the time for the annual evaluations.
4. Dedicate a half day in the planning advance schedule for the board to evaluate itself as an entire entity.
5. Have the committee chairs discuss the individual evaluations, with each board member annually either at the planning advance or immediately afterward.
6. Develop an approach to sell the idea.
   a. Discuss with the chairman of the board, CEO, chairman of the CAAC, and corporate legal counsel the best approach to take with the board and its members.
   b. Identify the key members of the EC, CAAC, and full board with whom I would meet to prepare them on the instrument and the approach to take with their committees and the board, respectively.
7. Identify the timing and approach to use with the EC, CAAC, and full board.

Seven areas are critical to the performance of the board:

1. Mission establishment and review
2. Selection and evaluation of the CEO
3. Strategic planning process
4. Review of quality of services
5. Set financial objectives
6. Establish management objectives
7. Continuous improvement

The evaluation process that reflects expectations of the board as a group would specifically focus on each of these areas.

Individual directors are selected based on their individual expertise and commitment to the mission of the organization. Demographic factors such as race, sex, nationality, region, or neighborhood are of secondary consideration. Directors are expected to not represent any specific constituencies or points of view. Rather the expectation is for directors to represent, from their unique perspective and judgment, the most beneficial direction or policy consistent with AHS’s mission.

Individual members should be evaluated in five performance areas:

1. Activity level
2. Commitment level
3. Education or orientation
4. Integrity
5. Understanding
RESULTS

The assessment of performance of the board and its members will be conducted annually, following the end of each fiscal year.

The process will begin each year on or before the first Tuesday of September, when the CEO’s office will send the evaluation packets to the board members. The CEO’s office will also complete the meeting attendance form to send with the mailing.

The board evaluation packet will consist of two assessment tools, one for the board member to assess his individual performance as a board member, and one that focuses on the performance of the full board and its committees. Each member will be supplied with his attendance records for board meetings, committee meetings, and other events and activities for the prior fiscal year. Instructions will outline the board evaluation and individual self-evaluation process and indicate the processing of the information to provide feedback to the board.

The completed board evaluation packets are to be returned within two weeks, which should be on or before the third Tuesday in September. Each board member will send his individual self-evaluation to the chairman of his assigned committee. The chairman of each board committee will bring the completed evaluation form to the October meeting of the EC, where the EC will review and act on each self-evaluation. The chairman of the board will review and complete the evaluation of the EC members. The EC, which functions as the nominating committee, will use the results of these self-evaluations to review candidates for renomination to the board.

The evaluations of the full board and its committees will be sent to the CAAC for analysis and the development of a board performance report to be completed and reviewed at the annual planning advance.

Expectations of the board as a group are as follows.

1. Mission establishment and review: It is the duty of the board to establish and subsequently review AHS’s mission statement annually to determine whether it continues to reflect the current and continued direction of the organization. Giving consideration to changes in the industry and local market, and the strategic plan of the organization, the board may choose to continue or modify the mission statement.

2. Selection and evaluation of the CEO: The board will review and evaluate the successful fulfillment of the established management objectives. This review and evaluation will be presented to the board in the form of an annual report and review of the CEO. Established management objectives will be consistent with the organization’s mission as set by the board.

3. Strategic planning process: To guarantee that the mission of the organization is fulfilled, the board annually participates in a process that updates and reviews the strategic plan. The plan is updated as necessary to meet changing needs in
the market and organizational mission. Examination of the strategic planning process is valuable because it provides feedback to improve the process and plan for the future.

4. Review of quality of services: The board will review and evaluate the quality performance of the organization through a quarterly report on two or three quality indicators provided by the professional affairs committee.

5. Set financial objectives: Based on recommendations from management, the board sets financial objectives annually to ensure financial viability of the organization. These objectives will reflect both long- and short-term financial direction and set financial performance standards necessary to guarantee protection of the community’s investment in AHS. These objectives will be reflected in the annual budget and long-range capital plan.

6. Establish management objectives: The board, using recommendations from management, establishes operating objectives for the organization. These objectives will reflect specific measurable steps necessary for the organization to successfully fulfill its mission and will consist of four to six high priorities.

7. Continuous improvement: The board will annually discuss what it could do better, consistent with the board’s commitment to continuous improvement of its function as a group. In an annual review of board performance, the board discusses what it can do better to improve its efficiency, effectiveness, and functioning. All aspects of board function may be revised as necessary to improve performance.

Expectations of the individual directors are as follows:

1. Activity level: Each board member should attend board and committee meetings. It is important to attend special meetings of the board or committee called at times other than regular meetings. Every attempt will be made to accommodate the majority of members. Special functions board members are expected to attend include annual meeting of the members, planning advance, fundraising dinners, board and spouse holiday party, employee awards banquet, and any new facility or program openings.

2. Commitment level: Whenever possible, it is hoped that board members will utilize the healthcare services, programs, and facilities of AHS for their personal healthcare needs and those of their family, friends, and businesses. It is only appropriate that those who guide and direct the organization also view the organization through the eyes of the consumer. As a further demonstration of each director’s commitment to AHS, a personal donation of significant financial worth should be made annually. The significance is clearly relative to one’s ability to give, but a contribution of $1,000 or more would be considered a minimum. Each board member should also annually supply the foundation with names to add to the list of donor solicitations.
3. Education or orientation: All directors must attend one of the formal orientation sessions within their terms of service. Board members will attend two approved educational conferences away from the community within their three-year terms. Board members will tour all the facilities of organization within their three-year terms.

4. Integrity: Each board member must respect the confidential nature of board discussions. Each director has an obligation to express his point of view on issues but also has an obligation to not discuss minority opinions outside the boardroom with other people or organizations in the community. Each director must disclose to the board as a group any potential conflicts of interest and remove himself from any discussions where a potential conflict may exist.

5. Understanding: Board members will demonstrate familiarity with key issues of the organization and contribute to the discussions for decision-making purposes.

A copy of the evaluation instruments and attendance record forms can be found online at www.ache.org/pubs/jhm. The organization has successfully used this self-evaluation process for ten years.

SOURCE MATERIALS
A primary source of information used in the preparation of this case report was the author’s first-hand observation.

Norman J. Andrews, R.N., FACHE, is chief executive officer of Kindred Hospital—San Gabriel Valley in West Covina, California. He was senior consultant with Arthur S. Shorr & Associates, Inc., a leading Southern California consulting firm. With a master’s degree from George Washington University, Mr. Andrews has held various healthcare executive positions, including chief executive officer, chief operating officer, and chief nursing executive. He retired from the U.S. Army Reserves after 28 years of active and reserve duty for the Army Nurse Corps. He serves on numerous community boards and committees.