

Hospital-Physician Collaboration: Landscape of Economic Integration and Impact on Clinical Integration

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Context: Hospital-physician relationships (HPRs) are an important area of academic research, given their impact on hospitals' financial success. HPRs also are at the center of several federal policy proposals such as gain sharing, bundled payments, and pay-for-performance (P4P).

Methods: This article analyzes the HPRs that focus on the economic integration of hospitals and physicians and the goals that HPRs are designed to achieve. It then reviews the literature on the impact of HPRs on cost, quality, and clinical integration.

Findings: The goals of the two parties in HPRs overlap only partly, and their primary aim is not reducing cost or improving quality. The evidence base for the impact of many models of economic integration is either weak or nonexistent, with only a few models of economic integration having robust effects. The relationship between economic and clinical integration also is weak and inconsistent. There are several possible reasons for this weak linkage and many barriers to further integration between hospitals and physicians.

Conclusions: Successful HPRs may require better financial conditions for physicians, internal changes to clinical operations, application of behavioral skills to the management of HPRs, changes in how providers are paid, and systemic changes encompassing several types of integration simultaneously.

Keywords: Hospital-physician relationships, economic integration, clinical integration.

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THE CURRENT HEALTH CARE POLICY AGENDA IN the United States is focused partly on reforming payments (e.g., pay-for-performance (P4P), bundled payments, episodes of care, coverage of the uninsured) and delivery (e.g., medical homes, accountable medical staffs, reengineering of care). To be successful, most of these reforms must rely on collaboration between hospitals and medical staffs to coordinate care and deliver it efficiently within budgetary limits.

Hospitals and their medical staffs are engaged in a variety of collaborative arrangements labeled *hospital-physician relationships* (HPRs). Despite the considerable interest, the evidence base for HPRs is scattered and ambiguous. Moreover, it is unclear whether HPRs can help improve access to care, reduce the rate of increase in the costs of this care, and raise quality, that is, what some have referred to as solving the “iron triangle” or the “triple aim” (Berwick, Nolan, and Whittington 2008; Kissick 1994).

This article describes the continuum of HPRs that providers have developed, the goals they are designed to achieve, and their performance to date. This continuum spans three types of “integration”—noneconomic, economic, and clinical—but we focus here on the second category (economic integration) and its impact on the third category (clinical integration). We first describe the arrangements in these three categories and then discuss their strategic intent, the degree of congruence in hospitals’ and physicians’ goals, and the degree to which they embrace broader societal goals of access, quality, and cost. We next review the empirical research on the performance of HPRs and discuss the mechanisms by which economic integration fosters greater clinical integration. We argue that economic arrangements are loosely but nevertheless linked to clinical integration and that sometimes the latter may promote the former. Unfortunately, the evidence in the literature to substantiate this argument is thin and inconsistent. We then consider internal and external factors that can promote (as well as inhibit) economic and clinical integration. We conclude with some of the lessons learned from this analysis, and the policy implications of HPRs.

Research on and Policy Interest in HPRs

HPRs have long interested researchers, as they are critical to hospitals’ economic success. Physicians enjoy a monopoly in several major decision

areas: the decision to admit patients to the hospital (from the community or the emergency room), the decision to perform procedures, the decision regarding which procedure to perform, and (for the most part) the decision to prescribe an ethical pharmaceutical. In many supply areas, physicians have great influence over which products and services they will use for their patients and from which vendors they will order them. As a result of this decision-making authority, physicians control (directly or indirectly) 87 percent of all personal health spending (Sager and Socolar 2005). Research suggests that the quality of these interactions with physicians affects hospitals' ability to contain costs and improve their bottom line (Cromwell et al. 1998; ProPAC 1992).

HPRs are of increasing interest to policymakers as well. In September 2006, the Centers for Medicare and Medicaid Services (CMS) solicited proposals for two separate gain-sharing programs for physicians and hospitals: the Physician-Hospital Collaboration Demonstration (authorized by the 2003 Medicare Modernization Act) and the Medicare Hospital Gainsharing Demonstration (authorized by the 2005 Deficit Reduction Act). In the first session of its September 2007 public meeting, MedPAC discussed the collaborative and competitive relationships between hospitals and physicians (MedPAC 2007a). Then in the spring of 2008, CMS announced the Acute Care Episode (ACE) demonstration that will use bundled payments for cardiac and orthopedic cases treated by hospitals and physicians (CMS 2008). MedPAC also covered HPRs and bundled payments in its June 2008 report (MedPAC 2008). In addition, the State of New Jersey's Commission on Rationalizing Health Care Resources assigned one of its six subcommittees to study HPRs as a determinant of hospital viability and financial integrity (State of New Jersey Department of Health and Senior Services 2008).

HPRs also are important to the quality of hospital care. Early evidence noted the association between the quality of patients' outcomes and physicians' procedural volume, and recent evidence suggests that quality is positively associated with the proportion of physicians' activities performed at their primary hospital (Fisher et al. 2007). Research also suggests that the quality of physicians' relationship with their hospital affects the satisfaction of their patients and perhaps also the nursing staff (Grembowski et al. 2005; Haas et al. 2000; ProPAC 1992). Finally, with increasing numbers of uninsured patients seeking care in emergency departments where physicians are reluctant to take call, HPRs

have assumed greater importance for ensuring access to care as well as quality.

In the past, HPRs were characterized by symbiotic interdependence (Hawley 1950), in which the two parties had compatible incentives to increase the volume of care using the latest technology. Community-based physicians used the hospital, its staff, and its technology as their workshop in exchange for donating their time to taking call in the emergency room and sitting on hospital committees (Pauly and Redisch 1973). But over the past twenty years, a series of external changes to the health care system have moved HPRs from symbiotic to competitive interdependence. Prospective payments have led to different incentives: hospitals were incented to reduce Medicare patients' lengths of stay and expensive services but also had to persuade and educate physicians, whose fee-for-service incentives remained the same. Advances in technology, the accompanying shift to ambulatory care, and the rise of consumerism have forced hospitals and their physicians to compete for patients in outpatient settings, which traditionally were physicians' reserves. Finally, managed care organizations (MCOs) began dividing and bargaining separately with hospitals and physicians.

To deal with this competitive interdependence, hospitals tried "integrating" with physicians, first with their medical staffs, then with community-based primary care physicians, and more recently with specialists. Such integration efforts were initially designed to align the incentives of the two parties and engage physicians in joint bargaining with payers and in hospital management, cost containment, revenue generation, and quality improvement activities. Later, these efforts broadened to serve physicians' interests in maintaining, stabilizing, and raising their income, along with their desire to control their work environment.

Types of Integration

The types of providers' integration can be classified in several different ways. The Health System Integration Study (HSIS) proposed three: functional, physician-system, and clinical integration (Gillies et al. 1993; Shortell et al. 1996, 2000). *Functional integration* is defined as the coordination of key support activities (e.g., standardization of finance, human resources, planning) across hospitals in a system. *Physician-system integration* is the extent to which physicians are economically linked to a system,

use its facilities and services, and actively participate in its planning, management, and governance. *Clinical integration* encompasses hospitals' structures and systems to coordinate patient care services across people, functions, activities, and sites over time (Shortell et al. 2000, 129). The HSIS researchers argue that clinical integration is the apex of the three and is causally dependent on the development and successful execution of the other two. They assert, moreover, that clinical integration is the most important aspect of an integrated delivery system, since it entails the coordination of the continuum of care that directly interfaces with the patients (Shortell et al. 1996, 42).

Researchers also have studied integration in accordance with the three major models of organizing and coordinating economic activity: markets, networks, and hierarchies (Casalino and Robinson 2003; Powell 1990; Williamson 1993). At one end of this continuum, markets are characterized by arm's-length, contractual exchanges that are based on price and entail low commitment by and integration of the two parties. At the other end of the continuum are hierarchies that internalize the exchange within the firm's boundaries, ground the exchange in an employment relationship, and coordinate it using organizational routines and supervision. Between these extremes are network models of organization, which pool the two parties' complementary capabilities and base their exchanges in longer-term relationships built on trust and norms of reciprocity.

We propose a third approach. Drawing on the academic and consulting literatures dealing with HPRs, we categorize hospital-physician arrangements as noneconomic, economic, and clinical integration.¹

Noneconomic integration refers to hospitals' efforts to enlist physicians by making their facilities more attractive and accessible, their operations more efficient and convenient, their decision-making processes more participative and responsive, and their staffing better trained. These efforts can take the form of technology acquisitions, hospital branding, process flow improvements, management information systems, physicians' liaisons, referral services, clinical councils, physician leadership development, medical staff development, and additions to the number and skill mix of the nursing staff. Noneconomic integration also includes hospitals' efforts to improve managers' behavioral skills in dealing with physicians and removing the cultural barriers separating them (see table 1).

Economic integration encompasses hospitals' provision of monetary payments to physicians to provide, manage, and/or improve clinical services

TABLE 1
Forms of Noneconomic Integration

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- Technology acquisition
 - Facility upgrade and replacement
 - Hospital branding
 - Marketing of physicians' practices
 - Physician-to-physician referral programs
 - Increased number and skill-mix of nursing staff
 - Convenience of scheduling tests and procedures
 - Medical staff development plans
 - Medical office buildings
 - Clinical councils
 - Physician liaisons and mediators
 - Physician sales and outreach programs
 - Physician surveys and focus groups
 - Physician retreats
 - Physician leadership development
 - Hospital committees
 - New technology and value analysis committees
 - Managers' behavioral skills in dealing with physicians
 - Removing cultural barriers to HPRs
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and to perform organizational activities. These payments can take the form of professional service agreements, medical directorships, stipends, performance bonds, management contracts, gain sharing, leases, and co-management of clinical institutes and centers of excellence. Economic integration can also include joint-venture investments (e.g., in medical office buildings, ambulatory surgery centers, diagnostic imaging centers, service lines, specialty hospitals) and joint-risk reimbursement contracts from payers (e.g., bundled payments, pay-for-performance, capitated risk). Finally, economic integration can cover the aggregation of physicians into the organization, including the formation of group practices, as well as the employment of primary care physicians and specialists, often based on productivity and quality metrics. Employment models can be either temporary or permanent (see table 2).

Clinical integration refers to hospitals' structures and systems to coordinate patient care services across people, functions, activities, and sites over time. Common activities of clinical integration are utilization management programs, scheduling and registration systems, information systems that can track utilization by patient and provider, development

TABLE 2
Forms of Economic Integration

Recruitment of Physicians	Part-Time Compensation	Shared Risks and Gains	Leases	Participating Bond Transactions	Service Lines	Equity Joint Ventures	Aggregation and Concentration	Employment	Outsourcing and Sale of Service
• Location assistance and relocation expense	• Medical directorships • Department and program chairs • Management contracts	• PHO/IPA risk contracts with payers • Bonus/withhold contracts	• Equipment leases • Time-share leases • Block leases	• Subordinated debt issued to physicians	• Centers of excellence • Clinical institutes • Patient unit models	• Ambulatory surgery centers • Diagnostic imaging centers • Hospital-in-a-hospital labs	• Group practice formation • Concentration of inpatient volume • Hospital-based physicians	• Practice acquisition • Salaried employment • Foundation model • Hospitalists • Interimty transfers and funds flow models	• Syndicate hospital ownership and management to physicians
• Startup support: e.g., salary guarantee	• On-call contracts	• Pay-for-performance contracts	• Hospital payments	• Hospital provision of in-kind services for cost savings					
• Support for group practice growth: incubator model, temporary employment	• Medical executive positions (CMOs, VPMAs) • Professional service agreements	• Payer "guarantees" • Physician hospital organizations (PHOs) • Management services							
• Liability coverage assistance	• Exclusive coverage contracts	• Management services organizations (MSOs) • Independent practitioner associations (IPAs)				• Medical office buildings • Specialty hospitals • Retail clinics • Product line centers			

TABLE 3
Forms of Clinical Integration

• Guidelines, pathways, and protocols
Development
Implementation
• Profiling of physicians and episodes
• Feedback on physicians' performance
• Credentialing of physicians
• Common identifier of patients
• Disease registry
• Case management
• Medical management committees
• Disease management
• Demand management
• Patients' self-management skills and education
• Clinical information systems: EMR, CPOE, etc.
• Clinical service lines
Inpatient
Outpatient
• Quality improvement steering councils
• Continuous quality improvement (CQI)
Inpatient
Outpatient

of care standards, continuous quality improvement programs, clinical service lines, case management systems, population-based community health models, disease and demand management systems, common patient identifiers, and disease registries (see table 3).

Economic Integration Arrangements

Table 2 depicts representative (but not exhaustive) economic integration arrangements, which we define as follows.

Medical Staff Recruitment and Development

Hospitals are facing shortages of physicians in several specialty areas, as well as the gradual aging of their medical staffs. As a result, they have been drawing up plans to develop their medical staff, concentrating on areas of need and identifying specialists to replace aging physicians.

These specialists typically are members of existing community practices. Specialist *groups*, however, may not be willing to expand and assume the financial risk of a new member whose revenues need time to increase. In these situations, a hospital may use an incubator model, in which the hospital assumes the short-term liability of covering the new physician's salary until the group can absorb the practice. The new physician is part of the existing group but is financially independent until absorbed. Given the high salaries paid to specialists, however, the hospital can finance only a few such recruitments.

Part-Time Compensation and the Purchase of Services

Hospitals compensate physicians for serving in part-time administrative roles, such as department or program chairs, clinical chiefs, and medical directors. In addition, some hospitals pay physicians to provide on-call coverage for the emergency room, which can amount to \$1,000 or more a day. Finally, hospitals may offer management contracts to certain physicians or groups to oversee specific hospital services. Such contracts may be exclusive in nature and are typically structured as professional service agreements.

Shared Risks and Gains

In the early 1990s, hospitals began using a variety of structural models to contract with physicians for jointly managing care. These models included physician-hospital organizations (PHOs), management services organizations (MSOs), and independent practitioner associations (IPAs). The number of these models peaked in 1996 and since then has steadily declined, although some were successful (Greene, Beckman, and Mahoney 2008; Patel, Siemons, and Shields 2007).²

In recent years, new models of shared risk have emerged under different labels. Some pay-for-performance (P4P) models compensate physicians for clinical care improvements that require collaboration with hospitals (e.g., Bridges to Excellence, Medicare's Physician Group Practice Demonstration). Other P4P programs reward hospitals for improvements that may require physicians to collaborate (e.g., the Leap Frog Group, Medicare's Hospital Quality Incentive Demonstration). In a few instances in which physicians are salaried employees of the hospital,

both parties have jointly assumed risk through fixed-payment “guarantees” for elective procedures and a ninety-day follow-up period (e.g., Geisinger Health System).

Gain-sharing programs can take several forms. Perhaps the most visible is the joint effort by a hospital and medical staff to identify those clinical practices that increase the hospital’s operating costs without improving quality, to develop initiatives to eliminate such practices while maintaining quality of care, and to share the resulting cost savings directly attributable to the clinical initiatives. Savings can be shared with physicians either individually or collectively.³

Another form of shared risk and gain is the *bundled payment*, or payment for episodes of care, in which the physician and hospital are paid together in one lump sum, which then must be divided among the different specialists participating in the patient’s treatment. In the past decade, both public payers (e.g., Medicare’s Heart Bypass Center Demonstration) and private payers (e.g., Oxford Health Plan) have experimented with bundled payments, and they have become a cornerstone of suggested reforms of health care reimbursement (MedPAC 2007b; Porter and Teisberg 2006).⁴

Leases

Two recent changes in reimbursement have led to interest in leasing arrangements between hospitals and physicians. First, the Deficit Reduction Act of 2006 capped payments to physicians for outpatient imaging at the rate paid to hospitals, thereby eliminating much of the financial incentive for imaging in their offices. Physicians then sought partners to share the expense of equipment, supplies, and staffing. Second, CMS reduced its payments to ambulatory surgery centers (ASCs) to 62 percent of what it paid hospitals. Surgeons thus look at joint ventures with hospitals to offset some of the costs incurred by the facility or to take advantage of the higher hospital-based payment rates.⁵

Participating Bond Transactions

Participating bond transactions (PBTs) are relatively new financial instruments introduced into HPRs roughly a decade ago by health care attorneys. PBTs are high-yield, tax-exempt bonds held by physicians and other investors in a new venture (e.g., specialty hospital, ASC facility).

Their interest rates exceed the market rates and are based on the performance of the new financed entity. Physicians receive the interest before the bonds mature if the hospital or ancillary facility in which the physicians “participate” meets quality or efficiency targets. But if the physicians fail to meet the targets, the bonds can be called at any time, thereby halting the program. PBTs thus are an unusual type of pay-for-performance program.

Service Lines

Hospitals have developed service line comanagement models with certain physicians in a particular specialty, a broader service line, or a particular new technology (e.g., gamma knife). These models are also referred to as *clinical institutes* and *centers of excellence*. In one variant of the model, hospitals and their physicians participate in a joint venture overseeing the service line. The hospital provides management services (staff, supplies, space), while the physicians provide clinical oversight, conduct quality initiatives, and prepare budgets and planning. The joint venture owns the equipment and leases it exclusively to the hospital. In another variant, the *productivity model*, the hospital owns the institute, which is governed by a board made up of hospital staff and specialists and managed by the hospital’s physicians.

Equity Joint Ventures

A common joint venture is the division of equity ownership between a hospital and physicians. The two parties form a new entity (typically a limited liability company) and contribute funds (and/or offer guarantees to third-party lenders) equal to their proportionate ownership in the new entity. Physicians may govern the joint venture with hospital representation on the board, as well as manage its daily operations. The joint venture may also enter into a service contract with the hospital. This model is often used to develop ASCs, since ASC services are not subject to the Stark law.⁶ Two other common joint ventures are medical office buildings and specialty hospitals (heart, orthopedic).

A combination of the joint venture and the service line is the *service line joint venture*, which consists of a separately managed specialty “hospital within a hospital” that houses and organizes all clinically related services.

The service line joint venture offers the advantages of a freestanding specialty hospital without the need for physicians to invest in land and infrastructure (e.g., ER, support services). The hospital and its specialists jointly invest capital and form a separate management company to oversee it. A portion of the hospital's investment is its contribution of the existing facilities. Dividends from the management company are paid to vested physicians based on their equity interest.

Formation of Group Practices

The advantages of group practice for clinical quality, efficiency, and patient access were documented years ago in studies of prepaid staff models and hospital-sponsored groups (Freidson 1975; Luft 1980). Structures that foster "shoulder-to-shoulder" practice are thought to increase communication, information transfer, learning, and consultation among physicians. They also are believed to help physicians sharpen their technical skills, increase professional oversight, inculcate group responsibility and accountability, and enhance opportunities for changing their behavior and using care management systems.

Hospitals may acquire existing groups, aggregate employed solo physicians to form larger practices, develop professional services agreements with large groups that employ the physicians in foundation models, or develop mutually exclusive contracting relationships, such as between the Kaiser Foundation Hospitals and the Permanente Medical Groups. Groups are a more efficient way for hospitals to provide services (e.g., lower overhead costs) and capital (e.g., information technology linkages) to physicians. By linking with the hospital, groups gain greater access to capital to grow in their market, assume a stronger leadership role within the hospital or system, gain expertise and leverage in managed care contracting, increase their financial viability, and jointly pursue clinical integration.

Concentration of Inpatient Activity

The degree to which physicians concentrate their inpatient business at one hospital is believed to increase the symbiotic interdependence of the two parties and align their financial and clinical interests. This concentration can apply to both hospital-based practitioners (such as radiologists, anesthesiologists, and pathologists) who staff hospital ancillary

services, as well as to admitting physicians (who direct the majority of their patients to that particular hospital). Hospitals expend much of their energy marketing to “splitters,” physicians who divide their admissions among competing hospitals, to persuade them to send more patients to their facility.

Employment

Employment models can be used to integrate primary care physicians (PCPs), specialists, and single-specialty and multispecialty groups. During the 1990s, PCPs were often targeted for acquisition and employment by hospitals under the label *integrated salary model* (ISM). Now hospitals have shown renewed interest in employing physicians (particularly specialists), as evidenced by the greater number of recruiting searches and of physicians in groups of five or more employed by health systems (Sanchez 2007). Employment is usually based on productivity models using relative value units (RVUs) for compensation. Additional metrics can be used to incentivize physicians to pay more attention to quality and patients' satisfaction.

A recent trend has been the employment of a new brand of hospital-based practitioner, the *hospitalist*. Hospitalists can be employed by a hospital, a medical group using the hospital, hospitalist companies contracting with the hospital for coverage, or insurers to manage their enrollees after admission. Hospitalists can also be either generalists or specialists. Generalists monitor the inpatients of community-based practitioners, who thus are able to spend less time outside their office at the hospital. Specialists serve on hospital units experiencing staffing shortages (or seeking the advantages of routinized care), such as obstetrics (laborists), the intensive care unit (intensivists), the trauma unit (traumatologists), and surgery (surgicalists).

Several academic medical centers (AMCs) and integrated delivery networks (IDNs) with employed medical staffs (e.g., Geisinger, Carle Clinic, Mayo, etc.) have developed sophisticated models of economic integration based on their ownership of both the hospital and the medical group. Using interentity transfers, these systems have created “funds flow models” to determine how hospital surpluses should be allocated to the medical group to support patients' care and physicians' incomes, as well as the academic goals of teaching and research (Kennedy, Johnston, and Arnold 2007). These models base department budgets and, gradually,

individual physicians' compensation on their meeting various economic and quality metrics.

Hospital Syndication

A final model of economic integration is one in which the management and sometimes the ownership of a general medical-surgical hospital are transferred to a group of physicians. In the cases of Deaconess Hospital (Oklahoma City), Kino Community Hospital (Tucson), and Medical College of Pennsylvania Hospital (Philadelphia), physicians were brought in to resuscitate financially ailing institutions. In other instances, hospital corporations construct new facilities using syndicated ownership involving physicians.

Strategic Intent of Economic Integration

Hospitals' Goals

Hospitals have pursued economic integration strategies for many reasons, several of them financial. However, the particular goals pursued depend on the informant. Accordingly, lay executives frequently mention financial goals, while clinician executives often espouse clinical goals.

Capture the Outpatient Market. As patient care has gradually shifted to outpatient settings, community hospitals now view ambulatory care as a major growth market. They have entered this market to compete for profitable patient volumes and may pursue economic integration as a defensive strategy to work with the medical staff to maintain a piece of this market. For some institutions, the feeling is that "half a pie is better than none," that joint ventures can at least reduce market erosion. Executives also hope that economic integration may keep physicians (particularly specialists) from directly competing with hospital service lines in the future. Economic integration therefore is as much co-optation as cooperation.

This growth in the outpatient market has naturally attracted other entrants. Hospitals have witnessed a sharp rise in the number of free-standing ASCs and diagnostic imaging sites nationally or in their own markets, often launched by entrepreneurial physicians with the help of outside investors and chains. Hospitals have used economic integration

models to respond to this competition, neutralize the threat of niche providers, preempt their market entry, and prevent the loss of the outpatient market share.

Hospitals may also use economic integration as an offensive strategy to increase their outpatient volumes by hiring new physicians and expanding into new geographic areas. Hospitals may also hire new specialists to replace aging community practitioners and thus avoid losing current referrals.

Increase Hospitals' Revenues and Margins. Economic integration also helps increase a hospital's service lines, particularly in profitable areas like cardiac care, neurosurgery, oncology, and orthopedics. Such growth can finance new technology, renovations, and new and replacement facilities and can subsidize less profitable services. Service line goals may include hospital branding and attract patients and prominent physicians to the hospital's programs, which in turn can boost primary care and specialist referrals. They can also attract the interest of product vendors (e.g., imaging companies) in developing favorable technology packages, research support, and sponsorship of the hospital as a demonstration site for their equipment (Burns et al. forthcoming).

Increase Hospitals' Leverage over Pricing. Economic integration can help increase a hospital's leverage with its trading partners in the local market. For example, hospitals have traditionally used economic integration to work with physicians and present a united face in negotiations with MCOs. In contrast, hospitals now work with physicians to demonstrate improvements in quality and efficiency that can justify higher MCO reimbursement rates. Similarly, hospitals are working with specialists to standardize vendor and product choices to extract lower prices from manufacturers.

Improve Care Processes and Quality Outcomes. Economic integration may also be used to improve the process and outcomes of patient care. The goal of some hospitals is fully integrating patients' care across specialists and/or the inpatient-outpatient continuum and thus reducing the use of resources and the duplication of services in order to improve outcomes. Such efforts may be designed to enhance not only the quality but also the "service" aspects of care and thus attract more patients and referrals. Following Shortell and colleagues (2000), economic integration may also be viewed as the best platform for responding to externally driven initiatives in quality improvement, performance reporting, transparency, and patient safety.

Increase Physicians' Loyalty. Hospitals have recently focused their marketing attention on "splitters," physicians who split their inpatients between two or more hospitals. Indeed, evidence suggests that this is a sizable minority (37.5 percent) of physicians who are reimbursed for inpatient work in the Medicare program (Fisher et al. 2007). One of hospitals' problems today is that several of their high-admitting specialists (e.g., invasive cardiologists, noninvasive cardiologists, surgeons), compared with other specialties, concentrate less of their practice at one hospital. These high-admitting specialists are also some of the most dissatisfied members of the medical staff (Advisory Board 2005). Therefore, by targeting splitters for economic integration arrangements, hospitals hope to gain indirectly the loyalty of patients seen by those physicians.

Bolster Physicians' Practices and Incomes. Many hospitals have used economic integration to reinforce the practices of PCPs in their local markets. Such practitioners have seen simultaneously both a decrease in their reimbursement and an increase in their practice's overhead costs, liability insurance, and debt. Employment models have served to stabilize and sometimes increase PCPs' incomes, preventing their practices from folding, and securing the hospital's referral base. Employment can also supplement physicians' less favorable reimbursement with hospitals' more favorable reimbursement.

Address Pathologies in the Traditional Medical Staff. Finally, economic integration is used to address many problems in the traditional medical staff organization, such as the growing reluctance of community-based physicians to take call in the hospital's ER (O'Malley, Draper, and Folland 2007). This reluctance is driven by the opportunity cost of time spent away from their office practice, the inconvenience of time spent away from home, the lack of reimbursement for treating indigent patients, the perception of higher malpractice risks in the ER, and the late and unpredictable hours (Berenson, Ginsburg, and May 2006). The use of economic integration can address these issues by compensating physicians and hiring hospitalists.

The medical staff, as well, has been beset by specialists' "turf wars" prompted by medical advances. Whereas the traditional battles were over the scheduling of imaging and procedure times, the more recent struggles have been over technologies and procedures adopted by multiple specialties, such as kyphoplasty/vertebroplasty by both orthopedics and interventional radiology. To minimize turf battles, hospitals have tied these competing specialties together in service lines and multispecialty care teams.

Physicians' Goals

Increase Physicians' Incomes. Physicians' office overhead expenses rose from 55 percent in 1991 to 60 percent by 2005 (MGMA 2006), fueled partly by greater legislative, regulatory, and payer demands requiring more office staff. Likewise, the malpractice premiums of some specialists have also risen sharply. Like hospitals, physicians have seen the prices of medical supplies go up each year, without the same benefits of group purchasing or supplier leverage. Finally, evidence shows that younger physicians are carrying higher debt loads from their medical education compared with those of their predecessors (Kerr and Brown 2006). As a result, some observers claim that increases in practice expenses now outpace increases in reimbursement by a ratio of two to one (Garman 2007).

All these increases come at a time when physicians' reimbursement is declining. Physicians' average incomes (adjusted for inflation) fell 7 percent from 1995 to 2003, with the biggest decreases for PCPs (10 percent) and surgical specialists (8 percent) (Tu and Ginsburg 2006). To alleviate these concerns, physicians have tried to raise their incomes by increasing their patient caseloads, reducing their public-pay patient caseloads, diversifying their services, offering more profitable services, and adding diagnostic testing (VHA 2004). Several of these strategies have led physicians to compete with hospitals for outpatient specialty care.

Increase Access to Capital and Technology. To develop new services and profitable lines of business, physicians need capital to purchase equipment, erect buildings, hire new colleagues, and support overhead costs. Hospitals are obvious sources of this needed capital and technology and are attractive partners for economic integration, given their relatively greater brand in the market and ability to attract patients.

Increase Physicians' Control. Physicians have traditionally maintained control over the content of their work. This control, the principal characteristic of professionals (Freidson 1970), has eroded in recent decades owing to a host of factors, such as managed care, consolidation, and the greater percentage of patients covered by public payers (with whom physicians have little or no bargaining power). Physicians thus enter into some economic integration arrangements to increase their control over the operation and management of clinical sites of care, such as joint venture centers and hospital service lines (Berenson, Ginsburg, and May 2006). Physicians have been able to wrest some of this control away from hospitals in part because the local hospital is the only organization with

which independent physicians can negotiate from a position of strength (Kaufman 2007). Physicians' control is much more motivating than "physicians' alignment," an aspiration of hospitals that strikes clinicians as patronizing.

Increase Physicians' Satisfaction. A recent Kaiser Family Foundation survey revealed declining job satisfaction among a panel of 2,608 physicians. A 2005 AMGA survey of physician retention in medical groups found that two of the top three reasons for leaving were work pressure and hours and pressures to increase the volume of patients (Kennedy and Beeson 2007). Similarly, other consultants report that the retention of physicians is driven by compensation and work schedules: 32 percent of departures are driven by the search for higher compensation, while 17 percent are based on incompatible work schedules and excessive call schedules (Sanchez 2007).

Newer generations of physicians are reportedly less eager and willing to work the hours that older generations spent in their medical practice. They also are reluctant to accept risks and take call or unassigned patients. At the same time, they embrace employment and want to be compensated at the seventy-fifth percentile of the medical group's income benchmarks (Peters and Dorsey 2007). Such attitudes are largely consistent with hospital employment models.

Increase Quality of Service to Patients. Physicians may enter into economic integration arrangements with a host of service and quality objectives, including increasing patients' service, providing high-quality services at a lower cost, and offering more convenience to patients. Physicians may also hope to make hospitals more efficient to benefit their patients, ensure a great hospital for their family and friends, provide a return on their financial stake in the local hospital, and support their personal mission and contribution to the community (Cohn et al. 2005; Epstein 2007).

Congruence of Hospitals' and Physicians' Goals

The preceding discussion reveals some overlap between the goals pursued by hospitals and physicians in economic integration. Both seek to compete more effectively and to raise their revenues in the outpatient market. Both seek to increase physicians' incomes, control, and management over daily clinical activities. Both parties view each other as desirable partners for economic integration, which is viewed as a way of improving clinical processes and outcomes of care.

Our discussion also reveals, however, the somewhat orthogonal interests of the two parties. Hospitals want to gain leverage over payers and suppliers, to strengthen physicians' loyalty, to minimize physicians' splitting of inpatient volumes, and to correct pathologies in the traditional medical staff, all of which are not usually physicians' goals. Conversely, physicians seek career and lifestyle goals that may not be congruent with the hospital's interest in increasing patient volumes and physicians' productivity. According to some analysts, even though physicians may support the hospital's goals, they may neither share these goals nor feel responsible for achieving them at the expense of their own future income or professional satisfaction (Cain Brothers 2003).

Economic Integration and Societal Goals of Access, Cost, and Quality

A critical issue is the extent to which economic integration is an end in itself versus a means to a greater end, such as addressing the iron triangle of health care. The preceding discussion suggests that these societal goals are clearly not the primary aim of economic integration, and that revenue and income goals of providers seem to be the dominant motivation. Indeed, a review of the practitioner literature on economic integration—including trade magazines, consulting firm reports, and provider conferences on HPRs—reveals that societal goals are not frequently mentioned and are clearly not emphasized.

There are, of course, exceptions. Risk-contracting and gain-sharing models of economic integration are clearly designed to accomplish more than augment providers' incomes. They also place providers at risk or extend financial incentives for providers to reduce spending and improve quality. We should point out, though, that in most cases, external payers, and not providers, initiated such models.

Does Economic Integration Improve Access, Cost, and Quality?

Impact of Structural Vehicles and Shared Risk/Gain Models

PHOs and IPAs. Research from the 1990s found that membership in PHOs and IPAs had little effect on physicians' identification with or commitment to IDNs (Burns, Alexander, et al. 2001), the extent

of risk-sharing and computer linkages in HPRs (Dynan, Bazzoli, and Burns 1998), and physicians' leadership development and productivity incentives (Burns, Walston, et al. 2001). More recent studies find no impact on hospital costs and only mixed effects on hospital quality, volume, and prices (Ciliberto and Dranove 2006; Cuellar and Gertler 2006; Madison 2004).

Generally, clinical integration activities are underdeveloped in IDNs. The Health Systems Integration Study found that clinical integration was the most weakly developed type of integration in eight leading IDNs (Devers et al. 1994). The Center for Organized Delivery Systems study found that five clinical integration activities were weakly developed in freestanding and hospital-affiliated medical groups that were closely and loosely affiliated with large hospital-based IDNs (Shortell et al. 2001).

Risk Contracts. Given the dominance of PHO and IPA contracting vehicles in the 1990s and the evidence that these models had little infrastructure to manage risk (Burns and Thorpe 1997), it is not surprising that many studies failed to find any impact from these forms of risk contracting on clinical integration in the 1990s. Three early studies of physicians' compensation found that capitation payments to groups did not affect monitoring and profiling of physicians, standardization of care processes (e.g., use of practice guidelines and preventive care reminder systems), integration of patient care systems, or sophisticated clinical information systems (Elms 1996; Kralewski et al. 1996, 1998). By contrast, one study of hospital-affiliated groups (Shortell et al. 2001) reported that the percentage of group patients covered by HMOs was associated with the deployment and comprehensiveness of care management practices (e.g., quality reporting, use of disease protocols).

Other studies have found efficiency-related and spillover effects on physicians' practices from risk contracting (Glied and Zilvin 2002; Wang and Pauly 2005; Wang, Pauly, and Lin 2003). For example, one study found that the extent to which risk-sharing contracts penetrated a physician's inpatient practice helped reduce the adjusted charges and the lengths of patients' stays (Van Horn, Burns, and Wholey 1997). The study also found that as risk contracting spread, physicians became more efficient in treating both their managed care patients and their fee-for-service patients (but to a lesser degree).

Physicians' dependence on risk contracts strengthens their loyalty and normative and behavioral commitment to the IDN (Alexander et al. 2001). It also enhances the deployment and comprehensiveness of care

management practices (Shortell et al. 2001), but not physicians' attitudes toward care management practices (Waters et al. 2001). By contrast, productivity and incentive-based compensation had the opposite effect on loyalty and no effect on the deployment of CMPs (Alexander et al. 2001; Shortell et al. 2001).

Finally, between 2002 and 2006, CMS funded the Medicare Coordinated Care Demonstration to determine whether case management and disease management programs could lower costs and improve outcomes in Medicare's fee-for-service population. Fifteen participating sites were paid a capitated fee. None of the programs significantly reduced costs or improved patients' adherence to diet, medication, exercise, or self-care regimens. Only two programs affected the quality of care, and only one program reduced hospitalizations (Mathematica Policy Research 2007).

Pay-for-Performance (P4P). P4P programs have created a lot of interest among health plans but are only slowly emerging in local markets (Bodenheimer et al. 2005). Among the twelve sites studied by the Center for Studying Health System Change, only two had such programs in operation by 2005. Researchers attribute the emergence of P4P programs to the presence of large physicians' groups, IPAs, and integrated systems with the resources to manage and track patient care. In the ten other communities, physicians' responses to P4P ranged from skeptical to hostile. Due to wide variations in plan design and performance indicators, as well as their evolution, it is difficult to evaluate such programs (Pricewaterhouse Coopers 2007; Rosenthal et al. 2007).⁷

Lindenauer, Remus, and colleagues (2007) analyzed the effect on hospitals receiving P4P payments as part of the CMS/Premier Hospital Quality Incentive Demonstration. While the program had a positive impact on quality improvement, the effect was modest, and most payments were made to providers that already were high performers. After studying many of the same hospitals, Grossbart (2006) found no significant effect on quality improvement in two of the three clinical areas. The most recent evidence from the demonstration suggests that hospitals are continuing to make improvements in quality while simultaneously reducing mortality rates and costs, although these findings have not been peer-reviewed (Premier 2008).

Between 2005 and 2008, CMS funded the Physician Group Practice Demonstration to reward ten physicians' groups for improving patients' outcomes by efficiently coordinating care for chronically ill and high-cost beneficiaries. Coordination mechanisms included disease management,

transitional care management, home monitoring systems, quality improvement programs, and care standardization. Groups were offered performance payments based on practice efficiency and improved patient management, including the coordination of Part A and Part B services. Most groups implemented disease management programs, collaborative care management programs with nursing homes, and programs to modify physicians' practice behaviors and work processes. They also installed information technology to track high-risk patients, develop registries of chronic-disease patients, and establish physicians' feedback systems (Trisolini et al. 2006). Only two of the ten practices, however, qualified for the performance payments, which were based on reducing Medicare spending on their populations to 2 percent less than the growth rate of Medicare spending in the local market.

A recent report on lessons learned from the Group Practice Demonstration shows that motivating physicians and making organizational changes were major challenges. Meeting these challenges requires a systematic approach to implementing changes, developing team-oriented models for clinical care, allowing sufficient time for teams to discuss their tasks, and offering financial incentives for physicians to serve as leaders of change (Trisolini, Aggarwal, and Leung 2008).

Gain Sharing. Some of the hospitals in the Medicare CABG demonstration instituted gain sharing by paying cash bonuses to physicians for helping the hospitals lower their ancillary and supply costs. The physicians regarded the bundled payments and bonuses as incentives from the hospital, which led to their active participation in hospital cost containment programs. Indeed, the demonstration site achieving the largest reduction in operating costs and increase in CABG volumes was the hospital with the most comprehensive gain-sharing program.⁸

Nevertheless, the achievements of the demonstration project prompted many hospitals to create similar arrangements, leading to several requests for Office of the Inspector General (OIG) opinions of their proposed gain-sharing programs. Unfortunately, in July 1999, the OIG issued a special advisory bulletin that effectively banned gain-sharing arrangements as a violation of section 1128A(b)(1) of the Social Security Act's Civil Monetary Penalties Law (Wilensky, Wolter, and Fischer 2007). In 2001, the OIG issued an advisory opinion permitting some gain-sharing arrangements, and in 2005 it issued six advisory opinions allowing gain sharing in cardiology and cardiovascular services at four hospitals.

There is only one empirical investigation of these gain-sharing programs. Ketcham and Furukawa (2008) compared cardiac cath labs in hospitals with approved gain-sharing programs with cath labs in 123 hospitals without such programs. The study focused on the use of stents in more than 220,000 patients. They found that gain sharing reduced hospital costs by 7.4 percent, with the majority of savings primarily from lower prices for devices and secondarily from fewer devices per patient. The patients' treatment did not become more standardized, and their outcomes did not change, however.

Bundled Payments. For the last fifteen years, payers have experimented with bundled payments. In 1993, the Lovelace Health System developed a model of disease management that later came to be known as "Episodes of Care." The capitated program succeeded in improving outcomes and lowering costs for chronically ill patients, but by 2000 Lovelace dropped it with the demise of capitation (Bodenheimer, Wagner, and Grumbach 2002; Quinlan 1997).⁹

Medicare sponsored the Participating Heart Bypass Center Demonstration, which involved capitated, bundled payments to hospitals and four specialties treating episodes of CABG surgery between 1991 and 1996 (Cromwell et al. 1998). The program succeeded in saving the Medicare program \$42.3 million (10 percent per case), and Medicare beneficiaries, an additional \$7.9 million in Part B coinsurance. Three of the four participating hospitals generated cost savings but no systematic increase in patient volume (partly due to the advent of balloon angioplasty as an alternative procedure). Demonstration hospitals also had significantly lower inpatient mortality rates compared with national Medicare rates, and they reported decreases in complication rates. Other benefits of the bundled-pricing program reported by the evaluators were changes in physicians' practice behaviors, more exchanges of information between hospitals and physicians, physicians' help in cost containment, increased payments and cash flow for physicians, hospitals' adoption of detailed cost systems, profiling of physicians regarding resource utilization, development of critical care pathways for the different stages in the CABG patient's hospital stay, closer management of supply costs (use of generic drugs, cheaper vendors), reduction in ICU stays, and the spillover from many of these efficiencies to non-CABG patients.

Geisinger Health System similarly developed bundled pricing for CABG patients as part of its ProvenCare program. This program included a single, fixed price for all care pre- and postoperatively within a

ninety-day period (including rehabilitation and complications). Initial results suggested that compared with conventional care, ProvenCare resulted in fewer complications, lower hospital charges, shorter lengths of stay, and more home discharges (Casale et al. 2006).

Global capitated fees are one possibility for reforming Medicare payments to providers as a means of reducing geographic variation in costs unrelated to quality (Davis and Guterman 2007; Fisher et al. 2004). Indeed, Milliman analyses of variations in hospital lengths of stay indicate that many of the geographic regions with the most efficient hospitals are located around IDNs based in large, multispecialty group practices (e.g., Geisinger Health System, Carle Clinic, Scott and White Clinic) that often experimented with or received these types of payments (Parke 2007).

Impact of Service Lines, Joint Ventures, Physician Aggregation, and Employment

Service Lines. There is very little academic research on service lines. One of the earliest case studies concentrated on the experience of Johns Hopkins University Hospital, which decentralized its operations according to product lines (Heyssel et al. 1984). Empirical research focused on hospitals that coordinate nursing and ancillary services within a given clinical area, perhaps because physician-led service lines are a recent development (Parker, Charns, and Young 2001). Researchers report that service line structure is negatively associated with human resource outcomes, professional development, and job satisfaction of nonphysician clinical professionals (Young, Charns, and Heeren 2004).

ASC Joint Ventures/Specialty Hospitals. Over the last ten years, both the number of ambulatory surgery centers (ASCs) and the proportion of ASCs controlled by nonhospital chains and entrepreneurs have risen. In some states, the growth of ASCs has not yet had a major impact on overall hospital outpatient care revenues (Pennsylvania Health Care Cost Containment Council 2007). Nevertheless, the proportion of outpatient diagnostic and surgical procedures performed in Pennsylvania's ASCs rose from 10 to 27 percent between 2000 and 2006. Most of the growth (70 percent) in diagnostic and surgical procedures was in the ASCs. Analysts attribute this growth largely to issues of time and money, such as a more rapid turnaround in operating rooms, better predictability of scheduling, higher procedural volumes, more consistency in work

staffing, and greater governance and control by physicians (Cain Brothers 2003).

Researchers have investigated the impacts on cost and quality for freestanding specialty hospitals. Such hospitals enjoy a favorable risk selection of patients (“cream skimming”) by admitting proportionately fewer Medicaid and uninsured patients and patients with less severe illnesses (Cram et al. 2007; MedPAC 2005, 2006; Mitchell 2005). They also are less likely to have emergency departments and emergency capacity (GAO 2003; U.S. DHHS 2008). Specialty hospitals are not more efficient than general hospitals in their case-mix adjusted cost per discharge; in fact, some types of specialty hospitals have higher costs per case (MedPAC 2005, 2006). Nevertheless, they have higher margins and volumes of profitable DRGs (GAO 2003; MedPAC 2005; Mitchell 2005) and offer physicians a 20 percent return on invested capital.

Specialty hospitals have the same or lower mortality rates as general hospitals (CMS 2005; Cram et al. 2007; Fahlman et al. 2006) but higher readmission rates (CMS 2005). Moreover, the entrance of specialty hospitals in a market is associated with a higher use of surgical procedures (Mitchell 2007; Nallamothu et al. 2007).

Formation of Group Practices. Extensive evidence shows the benefits of a group practice over a solo practice. The Medical Outcomes Study (MOS) compared group practitioners with solo fee-for-service practitioners. The groups had lower rates of hospitalization, procedures, and prescriptions as a result of the greater availability of ancillary and specialized services in their offices, the thoroughness of physicians taking call during off-hours, greater coordination of care, and greater efficiency in patient management (Greenfield et al. 1992). Groups scored lower than solo practices, however, in patients’ overall ratings of outpatient care (Rubin et al. 1993), continuity of care in PCP offices, and access to providers (Safran, Tarlov, and Rogers 1994).

The National Study of Physician Organizations contrasted IPAs with organized medical groups. Casalino, Gillies, et al. (2003) and Li and colleagues (2004) reported that neither model was more likely than the other to use more care management practices (CMPs). Bodenheimer and colleagues (2004) subsequently reported that IPAs and younger physician groups were minimal adopters of CMPs compared with older medical groups. McMenamin and colleagues (2004) likewise found that neither model was associated with a higher number of health promotion programs offered but that IPAs were less likely to offer any health

promotion program. Schmitttdiel and colleagues (2004) also found that IPAs were much less likely than medical groups to offer reminders to patients and physicians, population screening, and preventive services. Overall, the first wave of the National Study of Physician Organizations (2000/2001) found that clinical integration efforts were in a nascent stage of development and were even weakly developed in nine premier physician organizations in the United States, such as the Cleveland Clinic, Mayo Clinic, and Permanente Medical Group (Rundall et al. 2002). The second wave (2006/2007) of the study reported a 23 percent increase in the utilization of care management practices, although these processes remain far from universal (Rittenhouse et al. 2008; Shortell et al. 2008).

Recent evidence from Mehrotra, Epstein, and Rosenthal (2006) shows that groups are more likely than IPAs to have electronic medical records, use more quality improvement programs, and report higher HEDIS scores on preventive measures. Gillies and colleagues (2006) likewise found that groups had higher composite quality scores than did loosely organized physicians' networks.

Researchers also investigated the effects of group practice attributes on clinical integration (Crosson 2005; Enthoven and Tollen 2005; Tollen 2008). Their research offers mixed findings regarding the impacts of group size on clinical integration (cf. Casalino, Gillies, et al. 2003; Ketcham, Baker, and MacIsaac 2007; Li et al. 2004; McMenamin et al. 2004; Rittenhouse et al. 2004; Schmitttdiel et al. 2004; Shortell and Schmitttdiel 2004; Shortell et al. 2001; Simon, Rundall, and Shortell 2007; Waters et al. 2001). The research also found mixed effects of multispecialty group practices over primary and single specialty practices on clinical integration (Gillies et al. 1994; Shortell et al. 2001; Waters et al. 2001).

Concentration of Inpatient Activity. Another type of economic integration is physicians' admitting dependence on the hospital, defined as the percentage of their total admissions at their primary hospital and/or the concentration of their admissions (using a Herfindahl-Hirschman Index or HHI). Studies at different points in time report that both measures improved physicians' identification and satisfaction with the hospital, their commitment to the hospital, their citizenship and referral behaviors, their admitting loyalty over time, and their trust in the hospital administration (Burns, Shortell, and Andersen 1998; Burns, Alexander, et al. 2001; Burns and Wholey 1992; Press Ganey Associates 2007;

Wholey and Burns 1991). Such findings help explain why hospitals focus much of their sales efforts on physician splitters.

Physicians' Employment. Physicians' employment had mixed performance effects. For individual physicians, salaries and stipends raised most measures of hospital loyalty, commitment, retention, trust in hospital administration, and citizenship behavior (Burns, Shortell, and Andersen 1998; Burns, Alexander, et al. 2001). One recent study found that physicians' employment through ISMs also reduced inpatients' mortality (Cuellar and Gertler 2006). But recent studies also reported that salaried models led to a higher intensity of inpatient utilization and higher indemnity prices but had no impact on Medicare physicians' and hospital expenditures (Madison 2004).

For group practices, hospital ownership of the group had a small, positive influence on the group's use of care management practices, the group's likelihood of offering health promotion programs, and the number of programs offered (Casalino, Gillies, et al. 2003; McMenamin et al. 2004). By contrast, hospital ownership had no impact on reminders to patients or physicians or the adoption of chronic care guidelines in order-entry systems (Schmitt diel et al. 2004; Simon, Rundall, and Shortell 2007).

Hospitalists. The new specialty of hospital medicine, *hospitalists*, has been the fastest-growing area of medicine in recent years, reaching 16,000 practitioners by 2005 (Kralovec et al. 2006). Hospitalists allow referring PCPs to delegate the hospital-based component of their patients' medical care and relieve attending specialists from rotation and emergency department duties. Their postulated ability to manage utilization and thereby contain cost without compromising the quality of care makes hospitalists attractive to hospitals as well. The use of hospitalists involves a trade-off, however, between better care coordination within the hospital (e.g., continuity from admission to discharge) and worse care coordination between the referring physician's office and the hospital.

A recent review showed that patients managed by hospitalists had lower total costs or charges than did patients in comparison groups, primarily due to shorter hospital stays (Coffman and Rundall 2005). Similar findings were reported by Kaboli, Barnett, and Rosenthal (2004), Halasyamani and colleagues (2005), Myers and colleagues (2006), and Southern and colleagues (2007). Most evaluations found no statistically significant differences in quality of care or satisfaction, suggesting

that hospitalists can reduce utilization without compromising quality (Meltzer et al. 2002). Studies by Meltzer (2001), Pressel, Rappaport, and Watson (2008), and Rifkin (2007) indicated that hospitalists contribute to clinical integration by formulating practice guidelines, thereby increasing adherence to national indicators of care and encouraging greater comanagement of complex cases by physicians and nurses.

Conversely, two other recent studies found that hospitalists had little effect on the costs or outcomes of care (Lindenauer, Rothberg, et al. 2007; Meltzer et al. 2005). One possible explanation for the discrepancy in results is that competition has forced nonhospitalist inpatient programs to match the efficiencies gained earlier by the facilities with hospitalists. A second possibility is that other members of the medical staff are learning from their hospitalist colleagues. A third possibility is that the efficiency gained from hospitalist programs is nearing exhaustion (e.g., programs can reduce lengths of stay by only so much).

Summary of the Empirical Evidence Base

Overall, the empirical evidence suggests that economic integration has only a few consistent effects on cost efficiency, clinical integration, or quality outcomes. Some of the inconsistency in these results reflects the form of economic integration and the time period studied. Research conducted in the 1990s or early 2000s shows that structural vehicles have little impact, that risk contracting has only mixed effects on the use of care management practices (CMPs), and that CMPs are only weakly developed. By contrast, more recent studies reported the greater development of CMPs and also that current OIG-approved gain-sharing programs help hospitals lower supply costs (but little else), that P4P programs exert only modest effects (likely due to few incentives), and that the use of hospitalists only slightly shortens patients' stays. Bundled payments seem to have a strong influence on costs and outcomes, although their effects may be commingled with gain sharing. Employment models also seem to have some effect on hospitals' commitment and use of care management practices, but not a strong effect. Finally, aggregation and concentration have positive effects.¹⁰

Additional Insights from Consulting Reports

McGowan and McNulty (2006) surveyed 362 hospital executives regarding which economic integration strategies they used and which

were most effective for aligning with physicians.¹¹ They discovered that employment models for practicing physicians were among the most effective strategies in accordance with the empirical evidence just presented. Financial support for hiring new physicians and employing a vice president for medical affairs—perhaps a proxy for focusing on the general management of the clinical enterprise—also is highly rated. Strategies not rated high in effectiveness were real estate joint ventures, risk-sharing contracts with the medical staff, payments to medical staff members for taking ED call and spending time in staff activities, and gain sharing. The perceived ineffectiveness of gain sharing may reflect the limited diffusion of these models among the survey respondents (perhaps because of the OIG's lack of support of such programs). Overall, the results did not find a relationship between the inclusiveness of the arrangement and either its diffusion or perceived impact.

Economic Integration and Clinical Integration

Why the Apparent Weak and Inconsistent Relationship?

Only a handful of studies and field investigations have explicitly examined the relationship between economic and clinical integration (cf. Casalino, Gillies, et al. 2003; Gillies et al. 1994; Miller 1996; Shortell et al. 1996, 2000, 2001; Waters et al. 2001). These studies and the literature just reviewed do not indicate either a strong or a consistent linkage between economic and clinical integration. Why not?

One reason is that most of the large-scale investigations were conducted in the 1990s during the early phase of clinical integration, and its limited spread likely prevented researchers from discerning a relationship. At this time, the Health Systems Integration Study found that clinical integration was the least developed of the three types of integration in the hospital systems examined (Devers et al. 1994). In the later 1990s, the Center for Organized Delivery Systems study found five types of clinical integration weakly developed in fifty-six medical groups affiliated with hospitals, a situation that had not changed by the start of the new millennium. Care management practices were underdeveloped in physician organizations in 2000/2001 and have spread only recently (Rundall et al. 2002; Shortell et al. 2008).

Besides CMPs, other elements of clinical integration seem to be underdeveloped as well. Financial/productivity incentives continue to dominate quality incentives in regard to physicians' compensation (Reschovsky and Hadley 2007). Only 20 percent of the physicians surveyed said that quality was included in determining compensation, and only 9 percent stated that it was a very important factor in compensation. Moreover, quality-based compensation is most prevalent in practices with the following atypical characteristics: PCP offices (rather than specialists), group/staff HMO models (rather than group practices), and high levels of capitation.

Clinical information technology (IT) also is underdeveloped in physicians' practices and is growing only slowly (Grossman and Reed 2006). Physicians reported an increase in their access to IT for five different clinical activities between 2001 and 2005, but the gap between adoption by smaller, versus larger, physician practices widened. Even with clinical IT, however, it may not be associated with the use of CMPs (Rittenhouse et al. 2008).

Why is clinical integration underdeveloped? The answer lies in the lack of adequate clinical information systems, the lack of external incentives from payers (at least until recently), the lack of financial and staff resources, large start-up and maintenance costs, the disruption to physicians' work flow, and physicians' busy schedules (Casalino, Gillies, et al. 2003; Reed and Grossman 2006; Rundall et al. 2002). These factors highlight a key finding in innovation research that the two essential ingredients are time and money.

Another possible reason, following our discussion of strategic intent, is that economic integration is not designed primarily to promote clinical integration (let alone quality of care). Indeed, economic and clinical integration efforts may be somewhat orthogonal, hence explaining the lack of a relationship. For example, one hospital executive told us that economic integration was designed to help the hospital pursue its various missions and support the bottom line and that clinical integration was a normative, external expectation to which the hospital must respond.

A third possible reason is that certain types of economic integration (such as group practice formation) critical to clinical integration are underdeveloped. Over the past ten years, the number of physician group practices has remained unchanged (Burns 2006). During this same period, the number of large physician groups (100 or more doctors) has not risen above 1 percent of all medical groups; indeed, 77 percent of

all groups have fewer than ten practitioners. Casalino, Devers, et al. (2003) reviewed many of the reasons for the shortage of large groups. They include the lack of physicians' cooperation, insufficient capital to grow, lack of physician leadership (paucity of management skills and physicians' reluctance to reward colleagues for administration), failure to manage costs for capitated patients, costs of dealing with regulatory mandates, news about the failures of other groups, and conflicts between primary care and specialist physicians.

Conversely, the number of mid-sized physician practices ranging from six to fifty practitioners has increased (Liebhaber and Grossman 2007). Such practices may be better equipped to respond to some economic integration initiatives (e.g., P4P) and clinical integration initiatives. However, the growth in these mid-sized groups has been confined to single specialty practices; the percentage of physicians in multispecialty practices fell between 1998/1999 (30.9 percent) and 2004/2005 (27.5 percent). Moreover, the growth in group practice may lead to not only HPRs but also new competitors with the hospital in the outpatient market.

A fourth and related reason is that hospital systems may not have a foundation for clinical integration. Researchers in the Health Systems Integration Study suggested that functional integration served as hospitals' foundation for building a system (Shortell et al. 1996, 43). On this foundation, hospitals built economic relationships with physicians that would then lead to clinical integration activities. In practice, however, functional integration is achieved when the multiple hospitals (operating units) in a system share the same business processes (human relations, finance, strategic planning, etc.) or centralize clinical services across operating units. It may be the case that hospital systems have not yet been able to centralize and standardize all these functions across their units.

Data collected by the American Hospital Association show that hospital systems became less centralized and turned into more loosely coupled confederations during the 1990s (Dubbs et al. 2004). This trend continued into the new millennium (see figure 1), indicating possible diseconomies from the overcentralization of hospital systems (Bazzoli et al. 2000) and a desire by systems to tailor their services to local issues in health care delivery (Shortell et al. 2000). Following Shortell and colleagues (2000), we might surmise that the shift to more localized, independent operations retards or undermines systemwide clinical

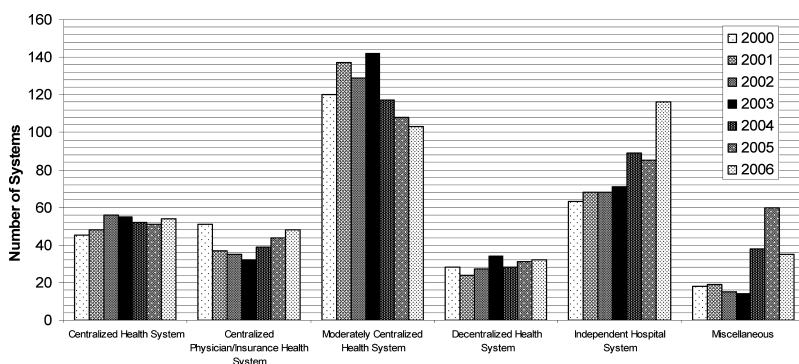


FIGURE 1. Centralization of Hospital System, 2000–2006

integration efforts. That is, as hospital systems decentralize and fragment, they may be less able to deal systemically with issues of economic and clinical integration (e.g., shared arrangements across hospitals).

A fifth reason for the weak relationship between economic and clinical integration may be that the economic integration efforts of the 1990s financially depleted many hospital systems and drained away monies from clinical integration. There is evidence that the greater the investment in integration efforts (e.g., acquisitions of hospitals and physicians, development of health plans) was, the worse the financial performance of integrated systems turned out to be (Burns, Gimm, and Nicholson 2005).

The last reason may be that clinical integration relies on more than just economic integration for its development, that it may also require reforms in payment methods, provider culture, and federal laws, a topic we consider in our conclusion.

Can Clinical Integration Drive Economic Integration?

Another issue to consider is whether economic integration drives clinical integration or vice versa, but we have no longitudinal studies identifying causation and direction. Since the HSIS research, the assumption has been that clinical integration is the outcome. Indeed, anecdotal evidence from hospital systems reveals that once physicians achieve income security and stability through employment models, they turn their attention to patient care issues and demand clinical information technology to coordinate it. Moreover, hospital systems use their market share

and economic integration to negotiate higher payments from insurers, which then fund clinical integration efforts, such as the “clinical integration pool” at Advocate Physician Partners (Lee Sacks, executive vice president and chief medical officer, personal communication).¹²

Additional anecdotal information suggests that clinical integration may drive economic integration. At the University of Pennsylvania Health System (UPHS), for example, electronic medical records (EMR) have been installed in some of the system-owned office practices for ten years. Community physicians use the EMR to order tests through UPHS’s labs and to schedule referrals to UPHS’s specialists. Physicians do not have to wait for referral letters to come back (let alone wonder whether they will come back) but have immediate access to information on how their patients are doing (e.g., test results, what the specialist did, specialists’ notes on their patients’ charts, status of patients’ discharge). As a result, these community physicians have the highest rates of referrals and inpatient utilization of the owned office practices. According to system executives, while it may not be possible to require community PCPs to refer their patients to the system, the ease and transparency of the EMR have led physicians to refer to the system on their own, thereby improving economic integration.

Similarly, at Advocate Physician Partners, the three physician groups aligned with the system (faculty practice plans, staff models, and employed physicians’ groups) have historically achieved the highest clinical integration scores. Physicians in smaller practices typically cannot match the larger groups on these indicators, which reportedly “serves as a wake-up call” to the independent physicians on the medical staff and may persuade them to join the larger medical groups. Moreover, it is financially infeasible at the present for Advocate to implement its ambulatory EMR in smaller practices, which serves as an additional stimulus for physicians to join the larger practices. Advocate executives believe that groups of twenty to twenty-five practitioners are required to gain the efficiencies of an EMR.

Nevertheless, by the end of 2007, one of Advocate’s PHOs (composed of solo practitioners) received the second-highest clinical integration score, indicating that smaller practices can begin to emulate the larger salaried groups. Advocate executives attribute the PHO’s success to the presence of financial incentives and the engagement of its physicians as well as the leadership of the medical staff president in quality improvement (Lee Sacks, personal communication).

Barriers to Economic and Clinical Integration

Three field-based investigations of large numbers of HPRs over the last fifteen years (CHMR, HSIS, CODS) have summarized the lessons that each learned regarding the barriers to integrating physicians with hospitals (Gillies et al. 2001, table 1; Shortell et al. 1996, 2000; Zuckerman et al. 1998). According to Gillies and colleagues (2001), the major barriers are cited by the majority of the hospital systems studied, suggesting that the problems are widespread. Although we will not review all these lessons here, table 4 lists the main categories (as well as some specific

TABLE 4
Barriers to Economic and Clinical Integration

Category of Barrier	Specific Illustrations
Physicians' internal issues	<ul style="list-style-type: none"> Physicians' dismissal of clinical integration Disruption caused by installation of clinical integration Physicians' decreasing time spent in hospital Shortage of large physicians' groups aligned with hospitals Physicians' conflicts of interest and lack of transparency Percentage of medical staff in one- or two-person practices Specialists' turf issues Cultural divide between physicians and hospitals Aging of medical staff Lack of physician leadership Lack of trust in hospital executives Lack of compensation beyond productivity
Hospital's resources	<ul style="list-style-type: none"> Hospital's financial condition Hospital's capacity constraints Lack of clinical information systems Lack of "system-ness" in hospital systems Hospital's desire to avoid dependence on one IT vendor Geographic dispersion Hospital's focus on other strategic initiatives
Market competition	<ul style="list-style-type: none"> Low CON restrictions on ASCs in state Penetration of nonhospital, physician-centric firms/chains Hospital's market share and hospital market HHI Hospital's payer mix and payer market HHI

(Continued)

TABLE 4—*Continued*

Category of Barrier	Specific Illustrations
Physicians' external market	<ul style="list-style-type: none"> Fragmentation of physicians Dominance of independent physicians Physicians' reimbursement trends and pressures Physicians' efforts to increase their incomes Changes in economics of physicians' practices Changes in work versus physicians' lifestyle preferences Rise in percentage of physicians working part-time Physicians' rising expectations Shortages of physicians in cardiology, orthopedics, neurosurgery
Regulatory pressure	<ul style="list-style-type: none"> FTC and DOJ investigations of physician-hospital alliances Rules of engagement: Anti-kickback, Safe Harbor, Stark OIG and IRS rulings Corporate practice of medicine statutes (five states)
Reimbursement pressure	<ul style="list-style-type: none"> Changes in Medicare reimbursement: ASC fees, physicians' fee schedules
Environmental trends	<ul style="list-style-type: none"> Technological advances making ambulatory care attractive Market malpractice rates

illustrations) of the barriers reported in these three field investigations as well as other literature on physician alignment.

We also should point out that HPRs are shaped by the complex regulatory environment in which they are developed. This environment determines which HPRs are developed (and which ones are not), how they are structured, and perhaps how well they perform. Examples of this regulatory environment are the Stark laws, the Civil Monetary Penalties Law, the Anti-Kickback Law, the Tax Exemption Law (for nonprofits), and the antitrust policy statements of the Federal Trade Commission (FTC) and the U.S. Department of Justice (DOJ) (American Hospital Association 2008; Cain Brothers 2007; Federal Trade Commission and U.S. Department of Justice 2004).¹³ The recent FTC and DOJ actions indicate the government's concern that integration serves as a provider

vehicle to increase market power (Casalino 2006). That is, the government wants providers to erect some of the building blocks for clinical integration before jointly contracting with payers. The providers believe that the government's position poses a chicken-and-egg problem for them: if they engage in joint contracting (a form of economic integration), they may run afoul of the government; but if they build the clinical integration infrastructure first, before any joint contracting, they may go out of business.

Facilitators of Economic and Clinical Integration

Earlier field studies and numerous case studies itemized the facilitators of economic and clinical integration, as well as broader HPRs. This list is presented in table 5, and we discuss a few of them next.

Improved Cash Flow for Physicians. One common prerequisite of successful integration is improving physicians' cash flow. Evaluators of the Medicare Participating Heart Bypass Center Demonstration noted that bundled payments meant that specialists no longer had to collect patients' copays (which became the hospital's responsibility) and that they were paid more quickly, before the patients' fees were collected. As the demonstration proceeded, specialists also received bonuses and in-kind payments from the hospitals for helping reduce utilization. As a result, the specialists' cash flow improved markedly in both speed and volume. Such features likely contributed to the demonstration's ability to encourage physicians to contain costs.

PCPs employed by hospitals and typically paid a target salary pegged to an RVU-based productivity model enjoyed similar cash flow advantages. Their total salaries were paid out of the hospital's central treasury in even installments over twelve (monthly) or twenty-six (biweekly) pay periods. As a result, employed PCPs did not have to worry about the cash flow vagaries of a private practice, in which office income might drop abruptly if a partner went on leave, requiring physicians to obtain bank loans or tap lines of credit. Other cash flow advantages were benefits packages offered by the hospital, hospital subsidies for practice losses, higher reimbursement rates for participating in the hospital's noncapitated contracts, and assistance with malpractice claims.

Similar cash flow advantages accrue to the faculty practice plans employed by AMCs and other fully integrated IDNs. The clinical-to-academic, interentity transfer process within AMCs (funds flow model)

is an academic version of risk contracting and gain sharing. Unlike the community hospitals whose shared gains are based on joint cost containment efforts, the gains in AMCs are more heavily determined by increases in revenue and productivity (Kennedy, Johnston, and Arnold 2007). AMCs are able to take this approach without running afoul of the

TABLE 5
Facilitators of Economic and Clinical Integration

Category of Facilitator	Specific Illustrations
Internal hospital factors	<div>Prior physician-hospital collaboration</div> <div>Physicians' compacts with hospital</div> <div>Hospital's convenience and operational efficiency</div> <div>Adequacy and number of nurses</div> <div>Visibility, credibility, integrity of administrators</div> <div>Reengineering of hospital work processes</div> <div>Reengineering of owned physicians' practices</div> <div>Reengineering of hospital medical staff</div> <div>Physician leadership development</div> <div>Engagement of key specialists</div> <div>Hiring of physician extenders</div> <div>Promotion of physicians' groups</div> <div>Compensation of hospital executives</div> <div>Physicians' involvement in decision making</div> <div>Investments in clinical information technology</div> <div>Trained implementers for certain IT vendors</div> <div>Financial information on cost of care provided</div> <div>Emphasis on technology assessment and supply chain management</div> <div>Reorganization to promote multidisciplinary care: service line management, colocation of interdependent specialties</div> <div>Quality of medical staff</div> <div>Primacy of quality goals</div> <div>Focus on clinical integration goals</div> <div>Appraisal and reward systems for meeting goals</div> <div>Population-based health planning</div> <div>Culture of information sharing</div> <div>Culture of commitment to resolving iron triangle</div> <div>Opportunities for partners to work together</div> <div>Empowerment of physicians</div> <div>Improved governance and management of physicians' organizations</div>

(Continued)

TABLE 5—*Continued*

Category of Facilitator	Specific Illustrations
Market competition	Preparation of physicians' practices for change
	Physicians' compensation models
	Hospital's market share and hospital market HHI
Physicians' external market	Hospital's economic surplus
	Hospital's leverage with payers
	Local market consolidation of physicians
Environmental trends	Local market employment of physicians
	Payers' interest in P4P, capitation, etc.
	Public pressures to improve safety and quality
	Normative pressures to conform to public pressures
	Possible repeal of whole hospital exemption
	Alignment of hospital's and physicians' payment incentives

Stark laws because their physicians are salaried and their goals include research and teaching. In recent years, many AMCs have enjoyed strong margins due to the higher acuity level of their patients and higher reimbursement rates. Teaching hospitals also enjoy higher reimbursement rates than do their faculty practice plans and are sharing that surplus with physicians using sophisticated productivity models that base academic departments, divisions, and (ultimately) the salaries of individual faculty on their clinical, research, and administrative activities. These incentive-based subsidies are designed to widen the entire margin for the health system and help the system achieve its tripartite mission. Examples like these illustrate the importance of aligning physicians' and hospitals' financial incentives in order to improve physicians' cash flow. We will return to this point later.

Reengineering of Physicians' Office Practices. Another facilitator of integration is the reengineering of physicians' office practices, to improve their financial viability and the foundation on which clinical integration efforts are built. Hospital-led efforts to reengineer physicians' practices focus on process improvements in important business-operating areas, such as accounts receivable (A.R.), staffing, and productivity. At

Intermountain Health Care, for example, the Physician Division reduced A.R. from eighty to thirty-four days. The division had physicians' clinics compete with one another, established "withholds" for meeting clinic budgets, and asked the system's vice presidents to help with finance and operations to meet these targets (Phil White, assistant vice president for operations, Intermountain Medical Group, personal communication).

Similarly, the primary care division at the University of Pennsylvania Health System—Clinical Care Associates (CCA)—is helping its owned practices operate more efficiently. CCA uses a productivity model for these practices, in which physicians are responsible for all the costs of their practices (e.g., staff, malpractice overage, space, benefits). CCA also adds a specific number of midlevel practitioners to offices, aggregates physicians into larger groups, and combines certain ancillary services (e.g., radiology, laboratory) and some specialists to form "practices of the future" that can boost physicians' productivity and achieve scale economies (Kevin Mahoney, senior vice president, University of Pennsylvania Health System, personal communication).

Other researchers have documented the successful efforts of group practices to reengineer physicians' practices and reduce the costs of care (Lewandowski et al. 2006), as well as the efforts of hospitals (e.g., Virginia Mason Medical Center) to implement the Toyota Production System in inpatient areas (Pham et al. 2007).

Reengineering Hospitals' Medical Staff. Another insight from both the consulting and health services research literatures is the importance of reengineering hospitals' medical staff to address current pathologies:

Physicians' reluctance to take call.

Specialty groups' turf wars.

Declining presence of primary care physicians in the hospital.

Declining amounts of time spent by physicians in the hospital.

Declining attendance of physicians at meetings of committees and medical staff.

Reluctance of younger physicians to assume leadership roles on the medical staff.

Lack of leadership by physicians.

Organization of the medical staff into silos.

The conflict between evidence-based medicine and "heroic" physicians.

The conflict between team-based care and the "lone ranger" mentality.

Physicians' perception that a key function of their medical staff is to "collectively represent their interests" vis-à-vis hospital executives. (VHA 2002)

Economic integration can address some of these problems (e.g., hospitalists, compensated leadership positions, physician leadership development), and some will be dealt with gradually as hospitals organize physicians into larger groups and/or acquire larger groups in the marketplace. Larger groups are better positioned to assume leadership roles within hospital systems, to develop more multidisciplinary models of care, to adopt information technology, and to embrace clinical integration.

Nevertheless, hospital executives need to resolve some of these problems now. One opportunity to address the issue of silos is through the widespread building and expansion programs currently pursued by hospitals. These new facilities allow hospitals to locate specialties in adjacent spaces coinciding with centers of excellence and service line approaches, but they must be reinforced by financial incentives in order for specialties to work collaboratively. These facilities also enable clinical information technologies to be implemented in physicians' practices. *Clinical privileging* is another kind of hospital reengineering. In this, the credentials committee, staffed by physicians, adjudicates the turf conflicts between specialists and the models for different specialists to offer lucrative clinical services jointly.

Noneconomic Integration. Another consistent finding from consulting reports and case studies (substantiated in peer-reviewed research) is that the "hard levers" of economic integration need to be supplemented by the "soft levers" of noneconomic integration presented in table 1. In the early 1990s, Lewin-ICF compared pairs of hospitals that made money versus lost money under the Medicare program (ProPAC 1992). A key distinguishing feature was the level of both hospitals' and physicians' behavioral skills. These were physicians' trust in hospital executives, mutual respect and support, frequent and candid communication, physicians' involvement in all clinically related decision making, transparency of hospital finances to physicians, consistent physician and hospital executive leadership over time (i.e., low turnover), physician leadership development, and physician-led efforts to promote a sense of shared economic risk. This is consistent with models of superior corporate performance (e.g., General Electric) in which economic incentives are enhanced by a culture of achievement.

Similar findings were reported by Shortell (1991), Arthur Andersen (1993), the Health Systems Integration Study (Shortell et al. 1996), the Center for Health Management Research (CHMR) in its field study of several hospital systems (Zuckerman et al. 1998), and McGowan and MacNulty's (2006) survey of hospital executives. Berenson, Ginsburg, and May (2006) make the same point that hospitals can dissuade physicians from taking their business outside the hospital by improving the hospital's internal environment, thus making it more attractive for physicians to stay. Press Ganey Associates' (2007) surveys of hospital medical staffs likewise found that hospitals' least satisfying aspects were "input into strategic planning," "communication with hospital administration," "information regarding strategic planning," "responsiveness of the physician relations staff," "responsiveness of hospital administration," and "medical staff and administration relationships."

Other studies have emphasized different soft levers. Sg2 (2005) argues that the ground rules for HPRs must be rooted in "personal compacts" that define employees' expectations of the organizations in which they work. These expectations can be specific, such as the goals of both parties, or broad, like the societal objectives of the iron triangle or triple aim. One compact that clinicians might like is that hospitals should seek management *with* physicians, not management *of* physicians.

The related academic literature on the effects of "psychological contracts" (Rousseau 1995) concerns exchange agreements between an individual and a firm. Psychological contracts motivate employees to make behavioral commitments to the organization, and the violation of such contracts leads employees to withdraw their support and perhaps leave. An extended field investigation of the employed medical group at Allina Health System in the late 1990s revealed that the system's violation of its administrative and professional obligations increased the turnover of physicians and reduced satisfaction, productivity, and commitment (Bunderson 2001).

Conclusion

This article reviewed hospital-physician relationships (HPRs) built on economic arrangements. We outlined the range of HPRs, their strategies, the cost and quality of the results, and HPRs' association with clinical integration. We also identified many types of HPRs that lack

evidence of a relationship to clinical integration, improved access, quality, or costs. Overall, our review suggests there is a high degree of HPR activity but not a commensurate level of HPR performance or linkage to clinical integration. Only a few economic arrangements have any systemic impacts.

What are we to conclude from this? Just as they did during the integration efforts in the 1990s, optimists will view these HPRs as eventually being able to contain costs and improve quality. Likewise, pessimists will view the HPRs as yet another failed effort that has consumed enormous attention, time, and money from providers.¹⁴ At the moment, the evidence seems to favor the latter view. To be fair, however, few other public- or private-sector efforts have succeeded in reining in costs or improving quality, and HPRs never really attempted to do so. Also, as in the 1990s, providers are pursuing many of these HPRs even without evidence linking them to improved care or, perhaps worse, with weak and inconsistent evidence.

Earlier we stated that integrated arrangements between hospitals and physicians were initially designed to align their incentives. Our review of their goals suggests, however, that the two parties are not clearly aligned with each other or with societal aims of increasing access, improving quality, and reducing costs. Thus, it may not be surprising that as a whole, HPRs do not address the issues of the iron triangle but are more oriented to solving providers' issues of volume and revenues. A major requirement for fixing the alignment problem may be changing providers' reimbursement system.

The further development of economic, compared with clinical, integration mostly concerns the features of the payment system that reward *additional* activities (e.g., admissions, imaging, procedures) more than the most *appropriate* activities. Thus, hospitals and physicians focus more on increasing volumes than on agreeing on the most appropriate care. The appropriate use of care is hindered by not only the lack of clinical integration but also the lack of agreement inside medicine on what that appropriate care is. Here the Dartmouth Group documented major differences in medical utilization not tied to medical outcomes (cf. Fisher et al. 2003).

The practices necessary to achieve clinical integration (e.g., small group formation, better and more extensive linkage of clinical information systems, agreement on evidence-based practice) are less developed than the components driving economic integration. As we stated, with

payment bundling or gain sharing—which are modest efforts toward more global budgeting (capitation being the most widely known variant in the last fifteen years)—there is more clinical integration. Various reform proposals by MedPAC (2007b), the Commonwealth Fund (Collins et al. 2007; Davis 2007; Davis and Guterman 2007), Goroll and colleagues (2007), and the Center for Studying Health Systems Change (Ginsburg et al. 2007) note that the aggregation of payments is likely to encourage clinical integration. Bundled case rates, coupled with P4P incentives, are a core element of the Prometheus payment model (de Brantes and Camillus 2007). Recently, the secretary of health and human services proposed fully bundled prospective payments for end-stage renal disease, and the CMS has proposed a new demonstration for bundled payments for certain inpatient surgical procedures. Nonetheless, payment bundling will continue to lag as long as the dominant payment mechanism is fee-for-service and more payments for more activities.

There have been efforts to limit some of these incentives, such as Medicare's recent decision to not pay for the medical costs of hospital-acquired infections or its proposal to not pay for avoidable errors or unnecessary readmissions to hospitals. Yet, like other experiments in the last twenty years, these probably will have some local effect but no national effect until they are widely implemented throughout the public and private payment system.

Enormous creativity and ingenuity have been used to create closer economic ties between hospitals and physicians, which have been attenuated in part by the unwillingness of each party to formally bond itself to the other for the long term. Both physicians and hospitals prefer to be free agents looking for advantage as the payment system and technology continue to change and the terms on which integration can advance are reconsidered. We reviewed the many responses and innovation by physicians and hospitals over the last twenty years. It is likely that the search for more clinical integration will remain elusive until the financial incentives are more tightly drawn to align hospitals' and physicians' goals and to achieve this integration.

More will be required than just changes in financial incentives. Physicians' financial needs must be recognized and addressed, perhaps by reengineering their practices and improving their cash flow. The medical staff must be reengineered as well, to take account of changes in how physicians use hospitals and to promote greater cooperation

across specialties in caring for patients. The most fragmented sector of the health care value chain—physicians' practices—must be aggregated through the formation of more medical groups. The accountability of extended hospital medical staffs (Fisher et al. 2007) should be encouraged, which in turn may lead physicians to refer inpatients to mainly one hospital and to construct medical homes responsible for the comprehensive and coordinated care of patients and their families. Finally, hospital executives must develop behavioral skills in managing physicians and applying the "soft levers" of integration.

Taken together, this is a tall order for both internal and external changes. They will certainly require the efforts of both providers and payers and maybe both private- and public-sector engagement as well. Based on historical experience, public-sector initiatives in changing reimbursement methods can lead to private-sector changes by both providers and payers toward greater economic and clinical integration.

Change requires not only efforts by multiple actors but also systemic and congruent changes. A combination of hard and soft approaches is needed. Executives and policymakers must consider a variety of approaches, such as those in tables 1, 2, and 3. Moreover, these changes must not create divergent incentives or misalign organizational components. As part of this effort, providers will need to look to the management science of systems engineering and system improvement, which is currently in its infancy in the health care system (National Academy of Engineering and Institute of Medicine 2005).

Generally, change also requires a substantial commitment of time and money, especially when engaging physicians in improving quality. At the same time, change requires recognizing that providers do not have much of either, which can limit the appeal of clinical integration efforts using information technology (e.g., EMRs) that does not save providers' time (Lo et al. 2007; Poissant et al. 2005). The Institute for Healthcare Improvement (2007) argues that such efforts must value physicians' time and avoid wasting it.

Finally, we believe that as currently conceived, providers' efforts to promote HPRs may be short-sighted. In an environment of health care reform focusing on quality and access to care, providers may need to expand HPRs' goals. For example, providers might consider how HPRs can be used to treat the growing number of uninsured people and the growing problems of chronic illness. Providers might revisit the 1990s' aspiration of promoting population health and collaborating with local

agencies, public health departments, and schools. In general, providers need to consider what delivery system reforms are needed to help the push for financing reform. Collaborative relationships and systems may serve not only the more immediate goal of clinical integration but also longer-range objectives such as population health management and addressing the iron triangle.

Endnotes

1. These three categories are not entirely orthogonal. As evident from the brief descriptions, information systems can be used in both noneconomic and clinical integration arrangements. Similarly, service line management programs can be used in both economic and clinical integration efforts. The three categories represent how providers often view HPRs, which somewhat resemble the other two classification schemes mentioned earlier. Noneconomic integration, represented by the exchanges inherent in the traditional hospital medical staff, corresponds to market models of organization. It does not attempt to remunerate, launch joint ventures with, or employ physicians. Instead, physicians donate some of their time and efforts to managerial and clinical activities in exchange for hospital privileges.

Economic integration falls into both network and hierarchical forms of organization. Network models of integration include joint ventures, payments for clinical and administrative tasks, management contracts and comanagement arrangements, and joint participation in risk-sharing payer contracts. Hierarchical models of economic integration include full-time employment and physicians' ownership of the hospital. Clinical integration exhibits both market and network forms of organization. On the network side, clinical integration consists of a set of tools provided by the hospital that physicians are asked to use, such as electronic medical records, patient registries, clinical guidelines and care pathways, information systems, disease management programs, and utilization management programs. On the market side, hospitals may offer financial incentives to physicians to use these tools (e.g., as part of their productivity-based compensation). Clinical integration can also take the form of clinical service lines and multispecialty teams, which can involve the reorganization of physicians and compensation of physician leaders.

2. The Federal Trade Commission (FTC) has complained that these vertical alignments of hospitals and physicians often lead to negotiating prices with MCOs and employers collectively without developing the requisite economic or clinical integration to meet antitrust guidelines. As a result of the FTC's actions, PHOs and IPAs have been forced to develop such integration or refrain from joint contracting. For example, they can assume risk in the form of capitated payments from MCOs and/or performance contracts with employers that feature bonuses (withholds) for meeting utilization and cost targets. Revenues are split between the participating hospitals and physicians. PHOs and IPAs bear risk only for those patients covered under such performance contracts, which typically constitutes a minority of the PHO's or IPA's total patient volume.
3. Programs offering individual payments to physicians require an advisory opinion from the Office of the Inspector General (OIG) in the U.S. Department of Health and Human Services, as well as substantial investments in documentation, thus limiting the appeal of this option. Collective payments to the medical staff or clinical department do not require an advisory letter from the OIG but lack direct rewards for physicians and may need a proxy method to recognize individual contributions.

4. Programs of shared risk/gain do not necessarily have to reward physicians monetarily for cost savings. Hospitals may pay physicians in kind as well, such as by giving participating physicians more time in the operating room and by converting the physicians' clinical nurse specialists and physicians' assistants to hospital employees (Cromwell et al. 1998).
5. At least three leasing models have been developed. In the "under arrangements" model, ambulatory surgery or diagnostic imaging services are provided through a joint venture in which physicians may have an ownership interest. Participating physicians then give the hospital the ancillary services (e.g., equipment, space); the hospital purchases that service on a "per-click" or "per-use" basis; and the hospital bills the third party under the hospital's ambulatory payment classification codes. In the "block leasing" model, the hospital leases to participating physicians its diagnostic imaging equipment (and possibly management services) in return for a fair market value fee. Each participating practice bills under its own group practice number. The "shared expense" model is a variation of the block lease model in which each practice assumes a portion of the costs of the diagnostic business based on its actual use.
6. The Stark law prohibits physicians from making a referral to an entity with which the physician (or a family member) has a financial relationship for the furnishing of certain designated health services (DHS) that are reimbursable under federal government programs. Ambulatory surgical services are not DHS and therefore do not raise Stark issues.
7. While there is a growing body of empirical evidence regarding the impact of P4P programs on medical groups (Gilmore et al. 2007; Levin-Scherz, DeVita, and Timbie 2006; Rosenthal et al. 2005), we review in this article only those studies conducted in hospitals.
8. Following this demonstration, Medicare planned two additional programs: the Medicare Provider Partnership Demonstration and the Participating Centers of Excellence Demonstration. Both offered bundled payments: the former for existing DRGs and the latter as an extension of the earlier CABG demonstration. Neither program was ever implemented. A former director of the Health Care Financing Administration, which oversaw these programs, has suggested that they were scuttled owing to political pressure on legislators exerted by academic medical centers (AMCs), which objected to the federal government's labeling of community hospitals as centers of excellence.
9. In 1997, Oxford Health Plans initiated bundled payments for acute, surgical episodes-of-care (Farha 1997; Freudenheim 1997).
10. We should point out here, however, that this literature review draws widely from several contexts in which these integration mechanisms are found (e.g., hospitals, hospital systems, physicians' groups, managed care plans). We did not consider the applicability of findings from one context to another, nor did we critique the methods used in the various studies cited.
11. Effectiveness, not explicitly defined in this report, is measured on a scale from 1 to 6, ostensibly reflecting each strategy's ability to strengthen the hospital-physician relationship.
12. To be sure, there also is evidence that clinical integration may facilitate other favorable economic outcomes. Data from cardiology groups suggest that higher group-quality scores (e.g., reduced readmission rates, lower nonmedical costs incurred after AMI) enable providers to negotiate higher reimbursements with health plans (Klepser, Doucette, and Brooks 2005). There also is more recent evidence that clinical quality initiatives can raise hospitals' bond ratings (Goldstein, Martin, and Nelson 2008).
13. Because the focus of this article is on economic arrangements, it cannot adequately analyze the regulatory environment.
14. Indeed, looking back at the 1990s, the majority of the providers' integration efforts did not achieve their own goals, let alone societal goals (Burns and Pauly 2002). One exception might be hospital mergers of a given size (Dranove and Lindrooth 2003).

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