
The Effects of Hospital-Level Factors on Patients' Ratings of Physician Communication

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EXECUTIVE SUMMARY

The quality of physician–patient communication influences patient health outcomes and satisfaction with healthcare delivery. Yet, little is known about contextual factors that influence physicians' communication with their patients. The main purpose of this article is to examine organizational-level factors that influence patient perceptions of physician communication in inpatient settings. We used the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey and American Hospital Association data to determine patients' ratings of physician communication at the hospital level, and to collect information about hospital-level factors that can potentially influence physician communication. Our sample consisted of 2,756 hospitals.

We ran a regression analysis to determine the predictors of poor physician communication, measured as the percentage of patients in a hospital who reported that physicians sometimes or never communicated well. In our sample of hospitals, this percentage ranged between 0% and 21%, with 25% of hospitals receiving poor ratings from more than 6% of patients. Three organizational factors had statistically significant negative associations with physician communication: for-profit ownership, hospital size, and hospitalists providing care in the hospital. On the other hand, the number of full-time-equivalent physicians and dentists per 10,000 inpatient days, physician ownership of the hospital, Medicare share of inpatient days, and public ownership were positively associated with patients' ratings of physician communication. Physician staffing levels are an understudied area in healthcare research. Our findings indicate that physician staffing levels affect the quality of physician communication with patients. Moreover, for-profit and larger hospitals should invest more in physician communication given the role that HCAHPS plays in value-based purchasing.

For more information about the concepts in this article, contact Dr. Al-Amin at malamin@suffolk.edu.

INTRODUCTION

Patient–physician relationships, and communication specifically, influence patient outcomes, patient satisfaction, recall of information, and adherence to treatment regimens (Chang et al., 2006; Roter, 1989; Schneider, Kaplan, Greenfield, Li, & Wilson, 2004; Zachariae et al., 2003). Evidence also indicates that physician communication is associated with a shorter length of stay and fewer complications (Trummer, Mueller, Nowak, Stidl, & Pelikan, 2006). As Windish and Olson (2011, p. 44) pointed out, the “patient–physician relationship is the cornerstone for quality of health care.” The U.S. Medical Licensing Examination and Accreditation Council for Graduate Medical Education emphasizes the importance of patient–physician communication through the evaluation of residents’ communication skills (Zolnieriek & DiMatteo, 2009). The Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey has provided publicly available data pertaining to patients’ hospital experiences. HCAHPS results were first reported publicly in March 2008 (Rothman, Park, Hays, Edwards, & Dudley, 2008). HCAHPS contains measures of interpersonal communication, specifically quality of communication with physicians and nurses. In 2009, 1 year after HCAHPS scores were first released, hospitals witnessed a modest improvement in their overall ratings and patient ratings on all dimensions, with the exception of physician communication (Elliott et al., 2010).

Clever, Jin, Levinson, and Meltzer (2008) argue that physician commu-

nication is significantly associated with patient satisfaction and with patients’ overall ratings of their hospital experience. Therefore, physician communication is not only important for its impact on patient outcomes but also is important because of its role in influencing overall patient ratings of the hospital (O’Malley et al., 2005). Patient perceptions and overall ratings of the inpatient experience have emerged as important indicators of hospital performance. Value-based purchasing (VBP) provides financial incentives for hospitals to improve HCAHPS scores and to maintain good scores (Elliott et al., 2010). Hence, patient ratings of the hospital experience are an aspect of care that can potentially influence the hospital’s livelihood. Among the care dimensions that influence patient perceptions of quality of care, physician communication is one of the most important. In fact, pay-for-performance initiatives will become tied less to technical competencies and more to the quality of patient–physician interactions (Safavi, 2006b).

While ample literature exists regarding the impact of patient–physician communication on patient satisfaction, clinical outcomes, and organizational outcomes (Hammerly, Harmon, & Schwaitzberg, 2014), limited research is available on the organizational factors that shape this communication. Physician behavior, including physician communication, does not occur in a vacuum, but is influenced by organizational structure, environment, and culture. Physicians’ attitudes about healthcare organizations may influence their cooperative behavior, and these attitudes are shaped by the degree to

which physicians identify with the organization (Dukerich, Golden, & Shortell, 2002). Furthermore, Hammerly et al. (2014) argue that organizational efforts to improve physician alignment should take into consideration physicians' emotional intelligence, including their communication and interpersonal skills.

The main purpose of this study is to examine organizational-level factors that influence physician communication with patients in inpatient settings. Physicians operate in an organizational context and, although communication skills vary at the individual level, organizational structure, culture, staffing levels, availability of electronic health records (EHRs), and other organizational-level factors affect physicians and, in turn, the time, commitment, and incentives they have to provide better patient experiences. This study contributes to our understanding of how organizational factors may affect physician communication, as measured by HCAHPS scores. Given patient expectations, the potential for financial penalties, and the negative impact that poor physician communication can have on a hospital's public image, this understanding is crucial for hospital leaders.

Physician ownership of hospital shares, defined by the American Hospital Association (AHA) (2009) as a hospital "owned in whole or in part by physicians or a physician group," is one factor that influences physicians' alignment and identification with the hospital and, thus, their attitudes toward hospital performance and success, their subsequent behavior, and its effects on organizational performance (McCarthy,

Reeves, & Turner, 2010). The organizational theory literature contains ample research on the role of employee ownership and its influence on organizational performance, especially for professional service firms such as hospitals (Klein, 1987; Long, 1980). Physician ownership has also been examined in previous healthcare research about the effects of organizational factors on the quality of physicians' services (Conrad & Christianson, 2004) and on patients' satisfaction, as evidenced by HCAHPS ratings (Makarem & Al-Amin, 2014).

In addition to ownership, which might influence physicians' attitudes, operational variables (such as physician staffing levels and number of full-time-equivalent [FTE] physicians available for a certain number of inpatient days) are likely to affect quality of care, the amount of time the physician has to take care of patients, and the quality of physician communication. Although the effect of nurse staffing levels on patient satisfaction has received a lot of attention from researchers (Aiken, Clarke, Sloane, Sochalski, & Silber, 2002; Vahey, Aiken, Sloane, Clarke, & Vargas, 2004), the relationship between physician staffing levels and quality and patient experience is understudied. Shanafelt et al. (2012) found a prevalence of burn-out among physicians in the United States, which can have detrimental effects on quality of care, but their study did not take physician staffing levels into account.

Given the critical role that physician communication plays in patient outcomes and satisfaction, it is important to explain the variation in patient ratings of physician communication not

just between patients, but also between hospitals. To that end, we take a step back from understanding how to improve physician communication to focus on establishing a clearer picture of the effects of organizational-level factors on patient perceptions of physician communication.

CONCEPTUAL FRAMEWORK

The conceptual framework by Donabedian (1980) has been used frequently in health services research on quality. According to this framework, there are three categories for assessing quality: (1) structure—organizational characteristics or attributes, such as staff-to-patient ratio, that influence care delivery; (2) process—protocols, practices, and the actual steps followed in delivering the service; and (3) outcomes—measures such as survival and mortality rates, readmission rates, and patient satisfaction and number of complaints (Bliesmer, Smayling, Kane, & Shannon, 1998; Davis, 1991). Both structure and process influence outcomes.

Donabedian differentiates between two domains of quality: (1) technical, the medical and clinical dimensions of care such as mortality and survival rates, and (2) interpersonal, the sociopsychological features of physician–patient communication (Cleary & McNeil, 1988). We focus on physician communication, an interpersonal dimension of quality, which also influences technical quality because poor physician–patient communication can result in patients' not understanding their treatment regimen and in not complying with physicians' orders and recommendations (Cleary & McNeil, 1988). Our main objective is to

determine how structural dimensions influence physician–patient communication. We hypothesize that a higher physician staffing level, a key structural attribute, is associated with higher ratings of physician–patient communication. Using HCAHPS data, Kutney-Lee et al. (2009) found that nurse staffing levels were significantly related to patients' ratings of nurse communication. We predict a similar relationship between physician staffing levels and patients' ratings of physician communication.

METHODS

Data Sources

We used two sources of secondary data to determine patients' ratings of physician communication at the hospital level and hospital-level factors that could potentially influence the quality of physician communication. We used 2009 HCAHPS survey data, which are publicly available on the Centers for Medicare & Medicaid Services Hospital Compare website. The HCAHPS survey was developed to assess patients' experiences of their hospital stay, and its validity and reliability are supported by several studies (Goldstein, Farquhar, Crofton, Darby, & Garfinkel, 2005; O'Malley et al., 2005; Rothman et al., 2008). The publicly available data adjust for patient-mix factors such as age, education, health status, and method of survey administration (Elliott et al., 2009; Jha, Joynt, Orav, & Epstein, 2012). Physician communication, one of the eight dimensions in HCAHPS, is measured by asking patients to rate how often their doctors communicated well with them. The final results are then

reported as the percentage of patients in a hospital who responded (1) always, (2) usually, and (3) sometimes or never.

For our analysis, we merged the AHA annual survey database (2009) with HCAHPS data. All organizational-level variables were derived from the AHA database. Specifically, we retrieved information about hospital size, FTE physicians and dentists per 10,000 inpatient days, hospitalists providing care at the hospital, physician ownership, for-profit ownership, public ownership, teaching status, specialty status, Medicare share of admissions (i.e., Medicare admissions divided by total admissions), EHRs, and high technology index.

Variables

Dependent Variable

Because we were interested in organizational factors that could impede the quality of patient–physician communication, we defined our dependent variable as the percentage of patients in a hospital who reported that physicians “sometimes or never” communicated well. This variable was reported in HCAHPS.

Independent Variables

The AHA database includes data regarding part-time and FTE hospital staff. However, the data do not distinguish between inpatient and outpatient settings, and they report FTE medical doctors (MDs) and dentists as one measure; hence, we were unable to exclude dentists from our staffing variable. From the AHA database, we included one staffing measure in our model: FTE MDs and dentists per 10,000 patient days. Several studies have used

the number of FTE registered nurses (RNs) per 1,000 patient days as a measure of RN staffing levels (Kane, Shamliyan, Mueller, Duval, & Wilt, 2007; Mark, Harless, McCue, & Xu, 2004). We created a similar variable for physician staffing level by dividing the number of FTE MDs and dentists by inpatient days and multiplying the quotient by 10,000; we used 10,000 instead of 1,000 because the number of MDs and dentists at a hospital is often much smaller than the number of RNs. While studies traditionally have examined the impact of nurse staffing levels on quality and patient satisfaction (Aiken et al., 2002; Bond, Raehl, Pitterle, & Frank, 1999; McCue, Mark, & Harless, 2003), ours is among the first studies to examine the role of physician staffing levels. Pharm, Raehl, and Pitterles (1999) were among the few researchers to investigate the relationship between physician staffing levels and quality of care, but they used hospital mortality rate, a technical measure of quality of care, as their outcome measure and found the relationship to be insignificant (White & Glazier, 2011). We also included a dummy variable indicating whether hospitalists provide care at the hospital. Previous research indicates no difference in patient satisfaction between those treated by hospitalists and those treated by primary care providers (Seiler et al., 2012). However, given the growth of hospitalists in the past decade, it is important to compare hospitals that have hospitalists with those that do not in terms of physician communication ratings.

Previous research findings indicate that physician ownership has a positive association with patients’ overall ratings

of the hospital experience (Makarem & Al-Amin, 2014). According to Long (1980), ownership results in increased involvement and commitment. In fact, when their incomes and reputation are tied to hospital performance, physicians are more driven to help the hospital enhance its performance and achieve its goals. Therefore, we included a dummy variable—"hospital owned in whole or in part by physicians or a physician's group"—in our model to investigate the effect of physician ownership on physician communication.

We also created a high-technology index, which is the total number of technologies or services in a hospital that are considered to be high technology. The AHA database contains a list of technologies and services available in hospitals. Here are the high-technology services, which we modified from Landon et al. (2006):

1. Adult cardiac surgery
2. Adult diagnostic/invasive catheterization
3. Certified trauma center
4. Extracorporeal shock-wave lithotripter
5. Bone marrow transplant services
6. Heart transplant
7. Kidney transplant
8. Liver transplant
9. Lung transplant
10. Tissue transplant
11. Other transplant
12. Robotic surgery
13. Computer-assisted orthopedic surgery

We controlled for organizational characteristics that have been found to influence HCAHPS ratings (Jha, Orav, Zheng, & Epstein, 2008; Lehrman et al., 2010). We classified hospitals as teaching hospitals if they belonged to the Council of Teaching Hospitals and Health Systems. Other organizational factors included as predictors in our model are hospital size (measured as the number of beds in a hospital), for-profit ownership, public ownership, presence of fully implemented EHRs, specialty hospital, and Medicare share of inpatient days. Specialty hospital is a dichotomous variable indicating whether the hospital is a limited service hospital, on the basis of the AHA database. We included these organizational variables in the model because of their documented influence on patient ratings of hospital experience or quality of care (Jha et al., 2008; Makarem & Al-Amin, 2014).

Regression Analysis and Sample Description

We ran the regression analysis using statistical software (Stata 13, StataCorp) to determine the association between ratings of physician communication and organizational-level predictors. Outliers or extreme values influence regression parameters and, therefore, are of concern in any regression analysis. High leverage refers to data points that have extreme values on a given predictor (Bobko, 2001). High leverage is of specific concern to this study because one of the main independent variables—FTE MDs and dentists per 10,000 inpatient days—has not, to our knowledge, been validated in the literature.

Therefore, we paid specific attention to this variable. After removing hospitals with missing data, we found a mean of 5.92 FTE MDs and dentists per 10,000 inpatient days, with a standard deviation (*SD*) of 17 (75th percentile = 5.71 and maximum value = 625). Clearly, there were points with high leverage. Therefore, we used the extremes command in the statistical software, which reports the top five cases with extreme values, and we eliminated these cases from the data set (values ranged from 203 to 625 FTE MDs and dentists per 10,000 inpatient days). Our final sample consisted of 2,756 hospitals.

In our sample of hospitals, 9% have teaching status, 14% are for-profits, 18% are public hospitals, only 5% are partially or fully owned by physicians, 3% are specialty hospitals, 68% have hospitalists providing care, and 23% have

fully implemented EHRs (77% had either partially implemented EHRs or no EHRs). The average hospital size is 210 beds, the average number of FTE MDs and dentists per 10,000 inpatient days is 5.5, and the average Medicare share of admissions is 50%. The hospitals in our sample have an average of 2.4 services or technologies out of a maximum possible high technology index score of 13. Table 1 provides details about characteristics of the hospitals. After testing for multicollinearity, we found a significant correlation between hospital size and high technology index ($r = 0.74$). Therefore, we dropped the high technology index variable from the model. Given the recommended threshold of 10 for variance inflation factors, we found no further evidence of multicollinearity in the regression model (Hair, Tatham, Anderson, & Black, 2006).

TABLE 1
Characteristics of Hospitals in the Sample

Characteristics	No. (%) of Hospitals <i>N</i> = 2,756	Mean (<i>SD</i>)
Teaching Hospital (Belongs to COTH)	256 (9)	—
For-Profit Ownership	386 (14)	—
Public Ownership	493 (18)	—
Physician Ownership	136 (5)	—
Specialty Status	91 (3)	—
Hospitalists Provide Care	1,879 (68)	—
Fully Implemented Electronic Health Records	637 (23)	—
Number of Beds	—	210 (212)
Full-Time-Equivalent Physicians and Dentists per 10,000 Inpatient Days	—	5.48 (10.96)
Medicare % of Inpatient Days	—	50.5 (16.88)

Note. *SD* = standard deviation; COTH = Council of Teaching Hospitals and Health Systems.

TABLE 2**Effects of Organizational Factors on Patients' Ratings of Physician Communication**

Predictor	Regression Coefficient	<i>t</i>	<i>p</i> Value*
Teaching Hospital (Belongs to COTH)	0.0922	0.53	.596
For-Profit Hospital	1.2775	9.24	≈ .000
Public Ownership	-0.3917	-3.53	≈ .000
Specialty Status	-1.1109	0.48	.630
Physician Ownership	-1.5118	-6.85	≈ .000
Electronic Health Records	0.1204	1.22	.223
Number of Beds	0.0027	10.57	≈ .000
Full-Time-Equivalent Physicians and Dentists per 10,000 Inpatient Days	-0.0084	-2.22	.026
Hospitalists Provide Care	0.7252	7.73	≈ .000
Medicare % of Inpatient Days	-0.0066	-2.6	.009

Note. $F(10,2756) = 53.75$ ($p < .001$); adjusted $R^2 = 0.16$; $N = 2,756$.

Note. Dependent variable: physician communication = percentage of patients who rated "physician communicated well" as "sometimes or never."

* p value significant at $< .05$.

RESULTS

In our sample of 2,756 hospitals, an average of 4.65% ($SD = 2.32\%$) of patients reported that physicians communicated well "sometimes or never." In the best-performing hospitals, no patients reported that physicians sometimes or never communicated well, whereas 21% of patients in the worst-performing hospitals reported that physicians sometimes or never communicated well. In 25% of the hospitals, more than 6% of patients reported that physicians communicated poorly.

The regression analysis results indicate that the regression model is significant with $F = 53.75$ ($p < .001$), and that the predictors in our model account for 16% of the variance in physician ratings (Table 2). The results

also show that all but three hospital-level factors have a statistically significant association with patient ratings of physician communication at a .05 significance level. The hospital's specialty status, teaching status, and availability of fully implemented EHRs had no significant association with ratings of physician communication. Hospital size, hospitalists' providing care at the hospital, and for-profit ownership were significant predictors of, and positively associated with, the percentage of patients who rated physician communication poorly ($p < .01$). For-profit hospitals and larger hospitals received poorer patient ratings of physician communication. Also, the percentage of patients who reported poor physician communication was higher in hospitals

in which hospitalists provided care ($p < .01$). To investigate this further, we ran a single-factor analysis of variance followed by a Tukey Honest Significant Difference post hoc test to compare physician communication ratings between (1) hospitals in which hospitalists did not provide care, (2) hospitals that contracted with independent hospitalists groups, and (3) hospitals that employed hospitalists. The results of our analysis show a significant difference between the three groups in the mean percentage of patients who reported poor physician communication ($p < .001$). Hospitals in which hospitalists did not provide care had the lowest percentage (3.8%) of patients reporting poor physician communication, followed by hospitals that employed hospitalists (4.8%). Hospitals that contracted with independent hospitalist groups had the highest percentage of patients (5.2%) reporting poor physician communication.

In contrast, FTE MDs and dentists per 10,000 inpatient days, physician ownership, public ownership, and Medicare share of inpatient days had statistically significant negative associations with the percentage of patients who rated physician communication poorly. In our sample, hospitals with more FTE MDs and dentists per 10,000 inpatient days had a lower percentage of patients reporting poor physician communication ($p = .026$). In other words, lower physician staffing levels are associated with poorer patient ratings of physician communication. Also, hospitals that are fully or partially owned by physicians had a lower percentage of patients reporting that physicians

communicated poorly ($p < .01$). Similarly, public hospitals and those with a higher share of Medicare inpatient days had a lower percentage of patients reporting poor physician communication ($p < .01$).

DISCUSSION

The healthcare system in the United States has moved toward VBP, which rewards or penalizes hospitals on the basis of their performance on patient experiences, clinical processes, patient outcomes, and, in the future, hospital efficiency (Ryan & Damberg, 2013). Moreover, patients' ratings of hospital stays and outcome measures are now publicly available. Given the impact that VBP could have on hospital financial performance and the impact that public reporting could have on patients' choice of hospitals, patient satisfaction with physician communication is a key improvement area for hospitals. An organization's contextual factors influence employee behavior, yet research is scarce regarding how hospital-level factors affect physician performance and behavior. Understanding hospital-level variables that influence physician performance is important, especially in relation to physician communication and interpersonal skills (Glick, 1985). This study offers a better understanding of organizational factors that impede physician performance in an inpatient setting by examining the effects of various hospital characteristics on patient perceptions of physician communication.

In addition to considering multiple organizational factors commonly examined in healthcare quality research,

this study sheds some light on the role of factors, such as physician staffing, that have been overlooked in previous research. To the best of our knowledge, no other studies have specifically investigated how these organizational factors predict poor patient–physician communication. Our model shows a statistically significant association between many organizational factors—7 out of 10 considered—and physician communication. Consequently, organizational factors should be included when studying patient perceptions of hospital performance and more specifically physician performance. Our study findings have important implications for physicians, hospital managers, and policymakers.

One main and novel finding is the significant role of physician staffing levels, which is associated with patient perceptions of physician communication. Given the prevalence of physician burnout in the United States (Shanafelt et al., 2012), this is an important finding that sheds light on an underexplored hospital-level factor that potentially could influence quality of care and patient experiences. Driven by hospitals' interest in increasing market share and aligning incentives with those of physicians, hospitals have been employing full-time physicians at a quick pace since the passage of the Affordable Care Act (ACA) (O'Malley, Bond, & Berenson, 2011). As hospitals rely more on physician employees, we need to be aware of how physician workload or physician staffing levels affect patient experiences. By focusing solely on nurse staffing, which is not directly linked to patient ratings of physician communication,

most studies have overlooked the influence of physician staffing on health outcomes and patient satisfaction. A smaller number of FTE MDs and dentists per 10,000 patient days indicates higher workloads and, consequently, less time and energy to spend with patients. Because this can have a detrimental effect on the quality of patient–physician communication, hospital managers should pay special attention to physician staffing levels. Another key factor related to physician staffing is the association between hospitalists and patient ratings of physician communication. Our findings indicate that hospitals that contract with independent hospitalist groups had the poorest ratings of physician communication. Thus, it is important to differentiate between the various arrangements hospitals have with hospitalists providing inpatient care.

Another key hospital-level predictor of physician communication ratings is physicians' full or partial ownership of the hospital. Our findings indicate that hospitals in which physicians own shares receive a lower percentage of poor physician communication ratings than hospitals in which physicians do not own shares. This finding is not surprising given that ownership influences employee attitudes, commitment, and performance (Klein, 1987; McCarthy et al., 2010). In line with the literature, our study found that physician ownership is likely to influence the quality of patient–physician communication and, thus, patient experiences, satisfaction levels, and ratings.

Consistent with previous research, our findings show that for-profit

hospitals and hospitals that are larger in size receive poorer patient ratings of physician communication. In fact, studies have reported lower patient ratings of their overall hospital experience in for-profit hospitals (Jha et al., 2012). The main goal of for-profit hospitals is to generate profits for shareholders. This goal is usually achieved with a focus on efficiency, which might come at the expense of the patient experience. Also, research findings indicate that size is negatively associated with patients' overall ratings of their hospital experience, with smaller hospitals reporting better ratings (Jha et al., 2008). Therefore, for-profit hospitals and larger hospitals should pay special attention to the quality of physician communication and implement strategies and incentive systems for improving it.

CONCLUSION

Study Limitations

This study has a number of limitations. First, the cross-sectional nature of the data, limited to HCAHPS ratings 1 year after the survey's public release, does not allow for observing changes in physician communication over time or how these changes may have been affected by organizational-level factors. Second, although we considered organizational factors that are commonly examined in healthcare research, other factors—such as organizational culture, physician job satisfaction, and physician training—could have significant effects on physician communication. Our findings indicate that a fully implemented EHR has no significant association with

patient perceptions of physician communication; however, our study did not take into account whether physicians have been trained to effectively communicate with their patients using EHRs.

Finally, there are limitations associated with some of our measures. Although we created a physician staffing level variable that is similar to the commonly used measure for nurse staffing, this measure, to our knowledge, has not been tested or validated in other studies. Also, our outcome variable—patients' ratings of physician communication—is measured in HCAHPS by means of a frequency scale ranging from "sometimes or never" to "always," rather than by asking patients to rate the quality of communication using scale points such as "poor" or "excellent." This can limit the validity of the measure because "always" is not necessarily the same as "excellent" (Reeves, Binder, & Grida, 2008).

Practical Implications and Future Research Directions

With the exception of the teaching and specialty status and the availability of fully implemented EHRs, all remaining seven hospital-level factors examined in this study were significant predictors of patient ratings of physician communication. Thus, organizational-level factors should be considered in future research aimed at examining different aspects of healthcare quality, especially patient perceptions and ratings of hospitals. Hospital leaders should be concerned about public reporting of data and how this may affect their bottom line. The results of this study indicate that hospitals may be able to improve the patient

experience, evidenced by HCAHPS ratings, by paying attention to organizational factors such as staffing, the hospitalists model, physician workload, and physician engagement and alignment with organizational goals.

Specifically, hospitals need to pay attention to physician staffing levels. Moreover, hospitals that rely on hospitalists need to consider the benefits and disadvantages of employing hospitalists versus contracting with independent groups. Doing so is important, not only with regard to patient ratings, but also with regard to outcomes and efficiency.

While offering physicians shares in the hospital is not a feasible option after the passage of the ACA, different mechanisms are available through which hospitals can provide physicians with a sense of ownership and, hence, strengthen the incentive to provide a better patient experience. An example is participating bond transactions (PBTs), which tie physician income to hospital performance. PBTs are tax-exempt bonds that carry a high yield of about 11% to 14%, and the interest payment depends on hospital performance; thus, these bonds result in strong alignment between physicians and hospitals (Al-Amin, Weech-Maldonado, & Pradhan, 2013; Safavi, 2006a).

In an increasingly competitive market, public reporting of patient ratings can push hospitals to perform better to sustain their market share (Chou, Deily, Li, & Lu, 2014). Research is needed to further understand organizational changes that can lead to improved physician communication over time. Researchers should examine the long-term effect of public reporting

on physicians' behavior, especially their communication with patients. In addition to longitudinal studies of secondary HCAHPS and AHA data, researchers could benefit from using different methodologies, such as case studies and matched control designs, to compare hospitals with similar capabilities and target markets to gain a deeper understanding of how organizational factors affect the quality of physician communication.

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