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Trends in hospital-ownership of physician practices and the effect on processes to improve quality

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Abstract

Objectives—Reports suggest a trend for physician practices to change ownership from physicians to hospitals. It remains unclear how this change affects quality of patient care. We report the effect of a change to hospital ownership on the use of care management processes (CMPs) and health information technology (HIT) among practices in the U.S.

Design—Trend analyses of three large national surveys of physician practices.

Methods—We included two cohorts of practices: large practices with 20 or more physicians and small/medium practices with less than 20 physicians. The main outcomes were the changes in CMP and HIT indices among practices that were acquired by hospitals. We used multivariate logistic regression to assess these changes.

Results—Large practices acquired by hospitals had larger increases in their CMP index than those that remained physician owned (11.0 point increase vs. 7.0 point decrease, adjusted p-value=0.03). Small/medium practices acquired by hospitals had smaller but significantly higher increases in their CMP score (3.8 points vs. 2.6 points, adjusted p=0.04). Among all practices, there were no significant differences in the change of the HIT index.

Conclusions—We found a significant increases in the use of CMPs among practices that were acquired by hospitals and no difference in HIT use. These findings suggest that a trend for hospitals to own physician practices may positive effect on chronic disease management and quality of care.

A number of reports suggest an emerging trend for physician practices to change ownership from physicians to hospitals.[1–8] For example, reports from the Medical Group Management Association's (MGMA's) Physician Compensation and Production Survey found that the

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percentage of physicians who were employed by hospitals increased from 20% in 2002 to over 50% in 2008.[1,9,10] The Center for Studying Health System Change found that in 2010 hospitals were rapidly increasing employment of physicians in 9 of 12 markets.[11] An American Hospital Association survey found that over 200,000 physicians were employed by hospitals in 2010 – an increase of 34% since 2000.[7]

Published reports suggest that the movement toward hospital employment results from multiple factors.[1,2,7,12] In particular, policies being adopted by federal and state payers (i.e. Medicare and Medicaid) and by health insurance plans such as the movement toward bundled and capitated payments, encouragement of patient-centered medical homes and accountable care organizations, and incentives for the adoption of electronic health records such as the HITECH Act and the Centers for Medicare and Medicaid's Electronic Health Record Incentive are thought to be large drivers of a shift to hospital-ownership.

It is unclear how a change to hospital-ownership affects quality of patient care. Given that hospitals generally have greater resources than physician practices, increased hospital ownership of practices may improve quality of care. There is evidence that hospital-owned practices use more recommended care management processes (e.g. disease registries, nurse coordinators, health information technology [HIT]) and may have mechanisms to improve care coordination.[13–15] On the other hand, there may be negative effects on quality such as less autonomy for physicians and staff or less personalized care. Hospital ownership may also be associated with increased market share by hospitals, and increased costs.[16,17]

In this paper, we report findings from a series of three national surveys of physician groups conducted between 2006–2013 from which we estimate changes in the use of systematic care management processes and health information technology to improve quality of care after practices were acquired by hospitals.

Methods

Data Sources

We used data from the three largest national surveys of physician practices in the U.S. – the National Survey of Physician Organizations 2 and 3 (NSPO2 and NSPO3) and the National Survey of Small and Medium Physician Practices (NSSMPP).[18–20] The sample, methods, and content have been described previously and are outlined in Appendix A.[18–21] Briefly, all three surveys were 40-minute telephone surveys with the medical director, president, or chief executive officer of the physician organization and focused on the use of evidence-based care management processes and health information technology particularly for patients with asthma, diabetes, congestive heart failure, and depression. All three surveys collected information on the structural characteristics of the group (e.g., number of physicians, ownership, specialty mix) and the external incentives that were in place to improve quality (e.g., payment for achieving quality measures, public reporting), in addition to the care management processes and use of health information technology noted above.

NSPO2 collected data in 2006 and 2007; NSSMPP collected data in 2007 through 2009; and NSPO3 collected data in 2012 and 2013. NSPO2 focused on large practices with 20 or more

physicians; NSSMPP focused on small and medium-sized practices with 1–19 physicians; and NSPO3 included practices of all sizes. Academic faculty practices were excluded from these surveys. The adjusted response rates for each survey were 60.3% for NSPO2, 63.6% for NSSMPP, and 49.7% for NSPO3. Further details are shown in Appendix A.[22]

Sample

This article focuses on two comparison groups. The first comparison group includes large practices that responded to both NSPO2 and NSPO3 and were owned by physicians at the time of NSPO2 (n=73). The second comparison group includes small/medium practices that responded to both NSSMPP and NSPO3 and were owned by physicians at the time of NSSMPP (n=768). We also report summary statistics for all the practices that responded to NSPO2, NSSMPP, and NSPO3 including the percentage of practices owned by hospitals in each of these survey.

Given the complex sampling structures of NSPO3 and NSSMPP, population ratio-adjusted weights were derived based on sampling probabilities with post-stratification adjustments.[23]

Variables

The main predictor variable was ownership which was measured with the question: “Who owns the equipment and employs the non-physician staff of your medical practice?” Categories of response included physicians; a larger medical group; a hospital, hospital system, or health care system; an HMO or insurance entity, or non-physician managers. We categorized ownership into three categories: physician-owned if the respondent stated that the practice was owned by physicians or a larger medical group; hospital-owned if the respondent stated that the practice was owned by a hospital, hospital system, health care system, HMO, or insurance entity; and other ownership (e.g., federally qualified health center or other not-for-profit practice).

To explore the effect of change in ownership on the use of evidence-based care management processes and health information technology we calculated a care management processes (CMP) index and a health information technology (HIT) index. These indices have been described previously and are outlined in Appendix C.[18] Briefly, the CMP index ranges from a score of 0 to 20 and is based on a practices’ use of disease registries, nurse care managers, feedback of quality data to physicians, reminders to patients, and non-physician staff for patient education. The HIT index ranges from a score of 0 to 14 and is based on a practice’s electronic health record capabilities including documentation, clinical decision support, quality measurement, order entry, access to data, and connectivity with patients.

Analysis

For large practices that responded to both NSPO2 and NSPO3 (comparison group one, described above), we calculated the change in the CMP and HIT indices and used multivariate linear regression to compare the change in these indices between practices that changed ownership from physician-owned to hospital-owned and practices that remained physician-owned while controlling for other practice characteristic. We did a similar analysis for small/medium practices (comparison group two, described above).

Results

Hospital-ownership of practices

Among all the practices that responded to NSPO3 in 2012–2013, 287 (13.2%) physician practices were owned by hospitals. The characteristics of the practices in our sample are shown in Appendix D. Among large practices, 26.6% were owned by hospitals in 2004–2006 and 35.6% were owned by hospitals in 2012–2013. Among small/medium practices, 8.3% were owned by hospitals in 2007–2009 and 11.3% were owned by hospital in 2012–2013.

Changes in Care Management and Health Information Technology

Among large practices that were physician-owned in 2005/2006, those that changed to hospital-owned had on average a lower baseline CMP score than practices that remained physician-owned (30.8 [SE 6.4] versus 47.0 [SE 3.1], adjusted p=0.03, Figure 2). By 2012/2013, practices that were acquired by hospitals had similar CMP scores compared with practices that remained physician-owned (41.8 [SE 7.8] versus 40.0 [SE 6.2], adjusted p-value=0.14) which reflected a significantly higher increase among practices that changed to hospital ownership (11.0 point increase versus 7.0 point decrease, adjusted p-value=0.03).

Among small/medium practices that were physician-owned in 2005/2006, those that changed to hospital-owned had a similar baseline CMP score compared with practices that remained physician-owned (20.0 [SE 2.4] versus 18.4 [SE 0.5], adjusted p=0.10). By 2012/2013, small/medium practices that were acquired by hospitals had a slightly but statistically significantly higher CMP score compared with practices that remained physician-owned (23.8 [SE 4.4] versus 21.0 [SE 0.7], adjusted p-value=0.03) which reflected a significantly higher increase in the CMP score among these practices (3.8 point increase versus 2.6 point increase, adjusted p=0.04).

At baseline, HIT index scores were similar among large hospital-owned practices and physician-owned practices (53.5 [SE 12.1] versus 40.0 [SE 6.01], adjusted p=0.54) and increased similarly for both groups (29.7[SE 6.7] point increase versus 32.2 [5.4], adjusted p=0.79). Among small practices, those that changed ownership had a higher baseline HIT index score (39.6 [SE 1.9] versus 31.4 [0.3], adjusted p<0.001). In both groups, the HIT index increased a similar amount [17.2 [SE 2.3] versus 17.2 [SE 1.3], p=0.41).

Discussion

In this analysis of three national surveys of physician groups, we found that the majority were owned by physicians at all time periods; however, practices that were acquired by hospitals had greater change in their use of CMPs compared with practices that remained physician owned. We found no difference in the use of HIT among practices acquired by hospitals versus those that remained physician-owned.

The current findings suggest that hospital acquisition of practices may have beneficial effects for patients with chronic illnesses. We found significant increases in the use of recommended evidence-based care management processes among practices that changed to

hospital ownership compared with practices that remained physician-owned. This was true for practices of all sizes. This may be the result of more financial resources or shared resources that become available to practices as they are acquired by hospitals.

Like care management processes, one could argue that the financial resources of a hospital enable practices to cover the capital expense of installing an electronic health record. Our findings do not support this hypothesis – we found no difference in the use of HIT or the change in the use of HIT in practices that were acquired by hospitals versus those that remained physician-owned. This may be due to policies such as the Health Information Technology for Economic and Clinical Health (HITECH) Act enacted under the American Recovery and Reinvestment Act of 2009 which provided incentives for the meaningful use of HIT.[24]

However, there may be off-setting negative effects if practices acquired by hospitals enable them to raise prices through increased negotiating leverage with payers. A recent study found that markets where hospitals report an increase in ownership of practices were associated with higher healthcare spending.[14] Hospital acquisition of practices may also have unintended effects on physician autonomy or rapport with patients – although, there are no data to date to support this possibility.

There are two main limitations to the present analysis. First, the response rate ranged from almost 50% to over 63% across the three surveys. Although this is a robust response rate – particularly for physician groups – there may be unobservable differences between respondents and non-respondents. Second, the data are based on the responses of a single informant in each group. While we sought the person who was the most knowledgeable respondent for the questions asked, it was beyond the scope of our research to validate the responses. However, a number of internal checks of the responses suggested consistent validity.

In summary, these surveys of physician groups showed minimal increase in the percentage of practices that were owned by hospitals; however, there appear to be increased use of processes for the management of chronic disease among practices that did change ownership. As the healthcare environment continues to change and evolve due to changes in public and private policies, it will be important to continue to monitor both the prevalence and the effects of hospital ownership of practices on patients and physicians. This is particularly important given the current findings that those practices that became hospital owned experienced a significant increase in their use of recommended evidence-based care management processes for patients with asthma, congestive heart failure, depression, and diabetes. Future research should examine the relationship between practice ownership and clinical and patient-reported outcomes of care.

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Appendix A: Characteristics of the National Study of Physician Organizations (NSPO) surveys

Study	National Survey of Physician Organizations 2 (NSPO2)	National Survey of Small and Medium Sized Practices (NSSMPP)	National Survey of Physician Organizations 3 (NSPO3)
Dates of survey	03/2006 – 03/2007	07/2007 – 10/2010	01/2012 – 11/ 2013
Total sample	1520	4803	3977
Total respondents	339 medical groups and 199 IPAs	1,931 medical groups	1,398 medical groups
Adjusted response rate	60.3%	63.6%	49.7%
Eligibility for survey	• Medical groups with at least 20 physicians • Must include physicians who treat asthma, diabetes, congestive heart failure or depression	• Medical groups with 1–19 physicians • >=60% must be primary care physicians, cardiologists, endocrinologists or pulmonologists	• Medical groups of any size • For medical groups with 1–19 physicians, >= 40% must be primary care physicians, cardiologists, endocrinologists or pulmonologists • For medical groups with at least 20 physicians, >=30% must be primary care physicians, cardiologists, endocrinologists or pulmonologists
Sample	• All medical groups nationally with physicians treating one of four chronic disease (including all NSPO1 respondents)	• Stratified random sample of eligible medical groups nationally	• NSPO2 medical group respondents • NSSMPP respondents • Additional stratified random sample of eligible medical groups nationally • Oversampled in AF4Q RWJF Communities

SOURCE: National Study of Physician Organizations II, National Study of Small and Medium-sized Physician Practices, National Study of Physician organizations III

Appendix B: Comparison Groups

Comparison Group	Sample Size
All practices in NSPO2, Large Practices (≥20 physicians) in NSPO3	589

Comparison Group	Sample Size
All practices in NSSMPP, Small/Medium Practices (1–19 physicians) in NSPO3	3078
Large practices (≥20 physicians) that responded to NSPO2 and NSPO3 that were owned by physicians in NSPO2	73
Small practices (1–19 physicians) that responded to NSSMPP and NSPO3 that were owned by physicians in NSSMPP	768

Appendix C: Index Elements

Care management processes index (range: 0–20 points) * ***For each of four conditions – asthma, coronary heart failure, depression, and diabetes- practice receives one point for the following:***	
Practice maintains an electronic registry for majority of patients with each condition	0–4 points
Practice provides nurse care managers for patients with each condition	0–4 points
Practice provides data to physicians on the quality of their care for patients with these conditions	0–4 points
Practice routinely sends reminders to patients with these conditions for preventive care	0–4 points
Practice has non-physician staff to educate patients about managing their condition	0–4 points
Health information technology index (range: 0–14 points)	
1. Electronic Documentation - Practice makes available an electronic medical record (EMR) that contains the patients medications - Majority of physicians in the practice use the EMR for the patient's problem list - Majority of physicians in the practice use the EMR for progress notes	0–3 points
2. Clinical Decision Support - Majority of physicians in the practice use the EMR for potential drug interactions - Majority of physicians in the practice use the EMR for prompts and reminders - Majority of physicians in the practice use the EMR for alerts on abnormal test results	0–3 points
3. Quality Measurement - Practice uses EMR to collect data for clinical quality measures	1 point
4. Physician order entry - Majority of physicians in the practice transmit prescriptions electronically	1 point
5. Electronic access to data - Majority of physicians have electronic access to clinical information on patient ER visits - Majority of physicians have electronic access to clinical information on patient hospital discharge summaries - Majority of physicians have electronic access to laboratory results - Majority of physicians have electronic access to pharmacy record of prescriptions filled by patients	0–4 points
6. Electronic connectivity for patients - Majority of physicians communicate with patients by email - Patients can view their medical record online	0–2 points

*Score is normalized to account for specialist practices that do not treat all four conditions.

Appendix D. Characteristics of hospital-owned practices in NSPO3, 2012–2013a,b

	All practices N=1278			Large practices n=208			Small/medium practices n=1070		
	Hospital-owned	Physician-owned	p-value	Hospital-owned	Physician-owned	p-value	Hospital-owned	Physician-owned	p-value
Percent of Practices	13.2	82.7		35.6	58.5		11.3	84.8	
Practice size (No, of physicians), mean (SE)	84.5 (65.9)	16.1 (7.0)	0.29	372.5 (118.8)	240.5 (68.4)	0.36	4.6 (0.9)	2.6 (0.3)	**0.004**
Specialty mix[b], %			0.22			0.26			0.54
Primary care only	49.3	77.0		2.5	32.4		62.3	79.7	
Single specialty, non-primary care	14.0	11.2		16.7	10.2		24.5	11.3	
Multispecialty	36.7	11.8		80.8	57.4		13.2	9.0	
Years in existence, mean (SE)	8.1 (3.2)	23.3 (0.3)	**<0.0001**	23.2 (5.3)	17.4 (7.0)	0.55	3.9 (0.8)	23.6 (0.6)	**<0.0001**
Location, %			0.48						
Northeast	26.9	24.4		20.6	17.0	0.08	28.6	24.8	0.21
West	9.6	30.1		15.8	14.2		7.9	31.0	
South	26.8	30.0		32.9	64.3		25.1	27.9	
Midwest	36.8	15.6		30.7	4.4		38.4	16.3	
% Revenue from Medicaid and/or poor, uninsured patients, mean (SE)	15.2(1.8)	11.9(0.2)	**0.04**	15.5 (0.9)	8.1 (0.8)	<0.0001	15.1 (2.0)	12.1 (0.2)	0.10
Pay for performance index score (0–3), mean (SE)	1.0(0.2)	0.8 (0.0)	0.24	1.6 (0.1)	1.6 (0.1)	0.94	0.8 (0.07)	0.7 (0.04)	0.35

[a]All analyses are weighted

[b]Primary care is defined as practices with only primary care physicians (general internists, family practitioners, or general practitioners); multi-specialty care is defined as practices with between 33%–99% primary care physicians; specialist is defined as practices with <33% primary care physicians.

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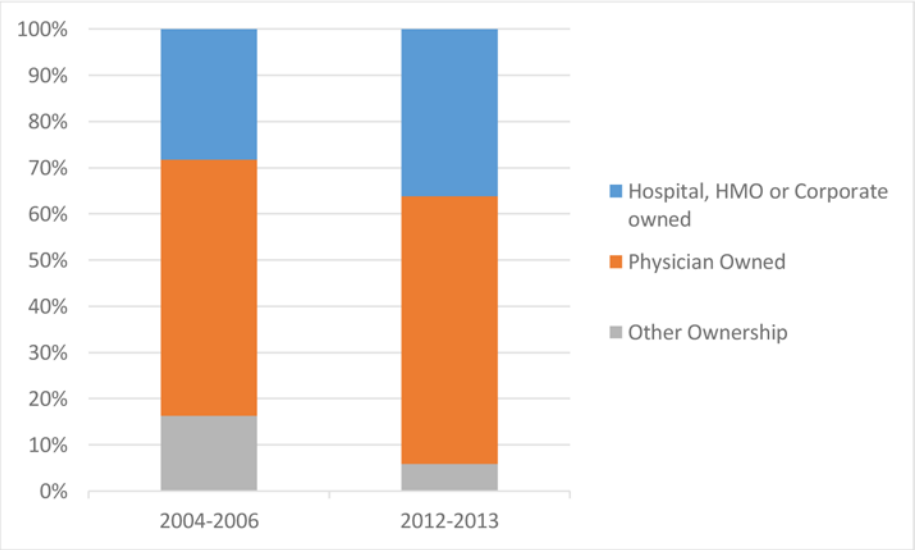
Take-Away

Reports suggest a trend for physician practices to change ownership from physicians to hospitals. We analyzed data from the three largest surveys of U.S. medical groups and found:

- No significant increase in the percentage of practices that were owned by hospitals.
- Increases in the use of evidence-based care management processes among practices that were acquired by hospitals versus those that remained physician-owned.
- No difference in the use of health information technology among practices that were acquired by hospitals versus those that remained physician-owned.

Panel a. Large practices (20 or more physicians)



Panel b. Small practice (less than 20 physicians)

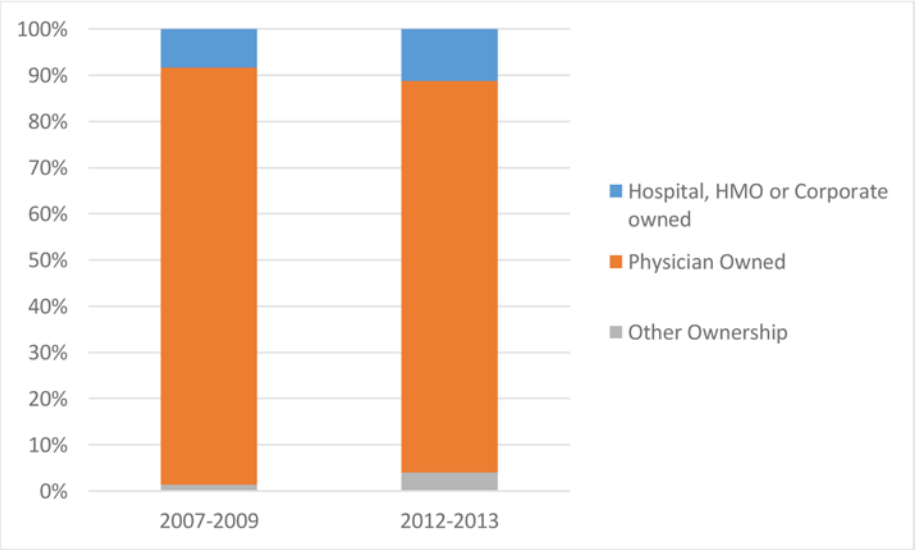
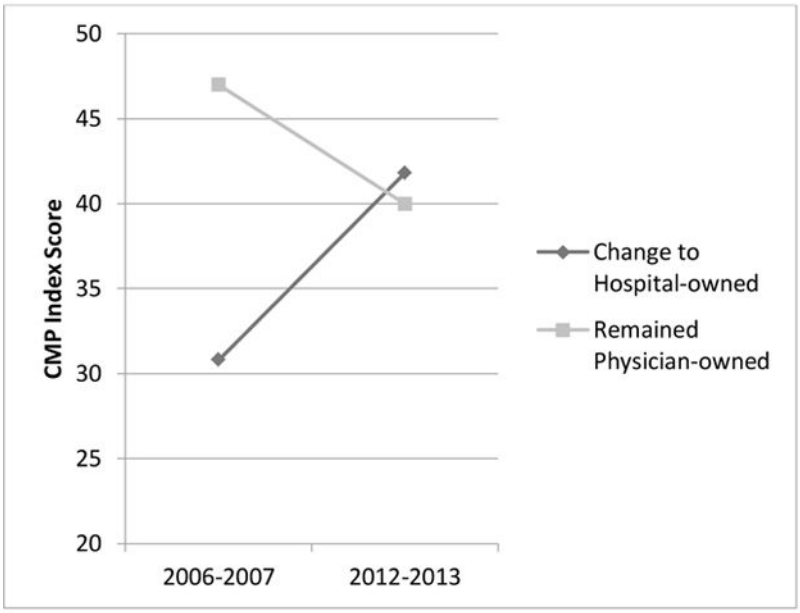
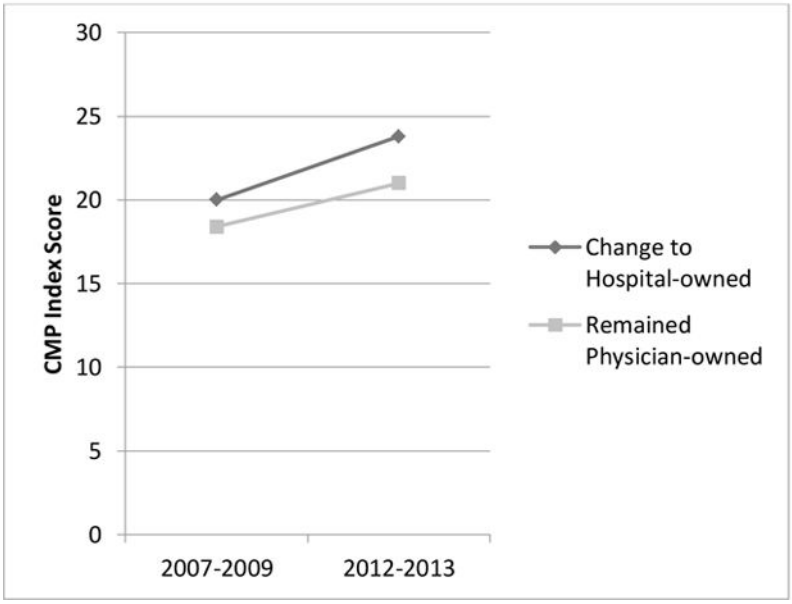


Figure 1.
Percentage of practices owned by hospitals by year and size

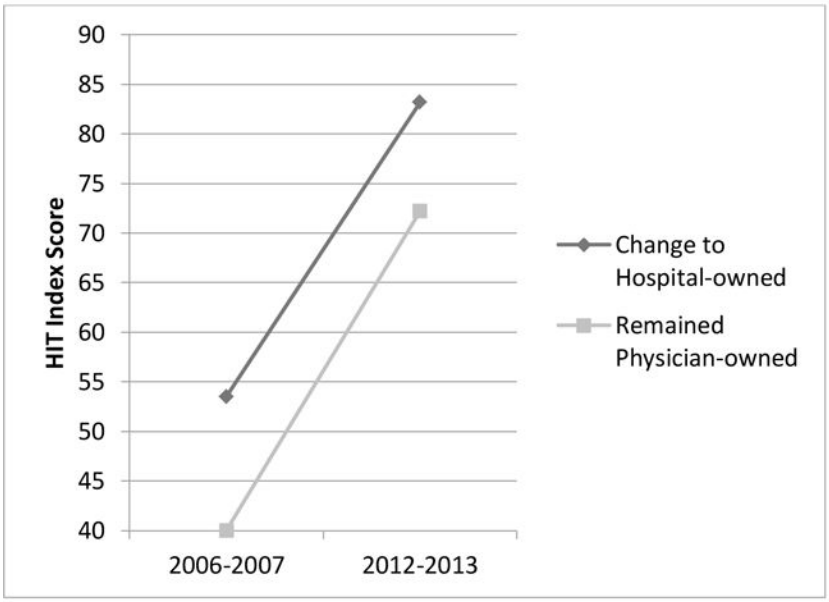
Panel A. Change in CMP Index among Large practices



Panel B. Change in CMP Index among Small and Medium practices



Panel C. Change in HIT Index among Large practices



Panel D. Change in HIT Index among Small and Medium practices

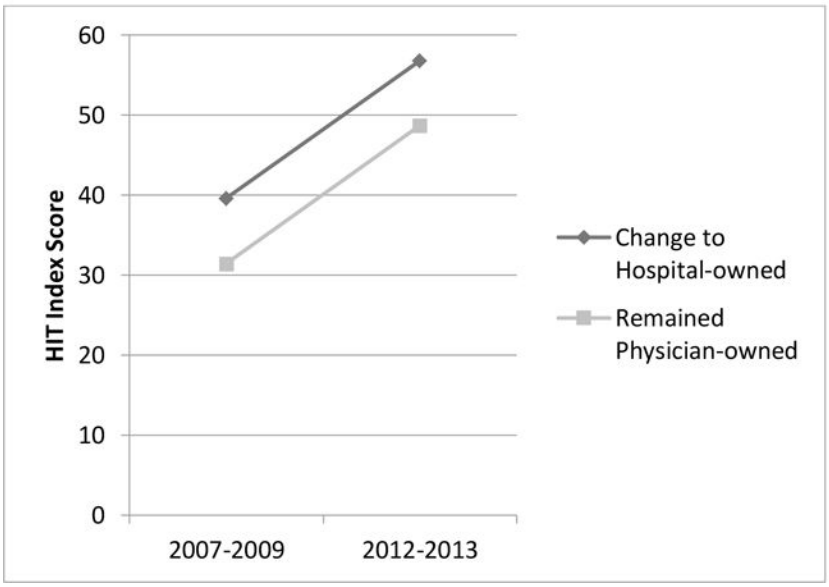


Figure 2.

Changes in CMP and HIT Indices between practices that changed to hospital-ownership compared with those that remained physician-owned[a,b]

[a]Weighted analyses using SAS v9.3 surveyreg procedure; [b]Adjusted for practice size, specialty mix, years in existence, location, % revenue from Medicaid and/or poor, uninsured patients, pay-for-performance index score, external evaluation index score