

ORIGINAL ARTICLE

Can transformational programs aimed at improving hospital management, leadership, and productivity systems affect financial performance?

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Abstract

Introduction: Management, leadership, and productivity systems (MLPS) are some of the critical success factors of effective organizations and may be associated with hospital financial performance. As such, many hospitals aim to improve their MLPS and engage in transformational interventions or programs designed for this purpose. The objective of this study was to evaluate trends in financial key performance indicators (KPIs) for hospitals that underwent an MLPS transformational program and to benchmark these trends against matched peer hospitals.

Methods: Target hospitals that completed an MLPS transformational program between 2006 and 2010 were identified in the GE Healthcare customer database. MLPS transformation was defined as substantial engagement (typically over a period of three years) in the disciplines of management, leadership, and/or productivity systems (*e.g.*, programs aimed at performance excellence, process improvement, employee engagement, or operational rhythm). A national database of hospital information was obtained, including various demographic and organizational variables for a set of over 5,000 US-based hospitals and hospital systems. Financial KPIs indicative of hospital profitability and cost containment (operating margin and expense per discharge) for 2006 through 2010 were also obtained for the majority of hospitals. A total of 18 target hospitals (those that underwent MLPS transformation) had demographic and financial KPI data available, and each was matched to a peer group of US hospitals using demographic characteristics.

Results: Most target hospitals had > 200 beds (67%) and were urban (83%) teaching (67%) institutions located primarily in the South (50%) and Northeast (44%) of the US. The target hospitals were matched to nearly 3,000 peers (range 21 to 1,273 peers per target hospital). Median percent change in operating margin among target hospitals between 2006 and 2010 was 125%, indicating substantial improvement in overall financial performance. Median percent change in expense per discharge for target hospitals was less than 3%, suggesting that they did not experience substantial increase in discharge-related costs between 2006 and 2010. Most of the target hospitals performed better than the median hospital among their peer set of matched hospitals: 78% (14 of 18) demonstrated a higher percent change in operating margin than their respective median peer, and 72% (13 of 18) of the target hospitals outperformed their median peer with a lower percent change in expense per discharge.

Conclusion: Overall, between 2006 and 2010, the target hospitals, having undergone an MLPS transformational program, demonstrated improvements in financial performance as measured by profitability and cost containment indicators, and a

majority performed better than their peers. MLPS transformational programs may have the potential to improve hospital financial performance as demonstrated by this analysis of financial KPI trends.

Key words

Management systems, Health care, Leadership systems, Productivity systems, Organizational performance

1 Introduction

Management, leadership, and productivity systems (MLPS) form the backbone of the critical success factors of highly effective organizations. To date, published studies have produced a wealth of knowledge relating to these factors and associated operational practices of high-performing organizations^[1]. The Baldrige National Quality Program defines “performance excellence” as an integrated approach by organizational leadership and management that results in the following: (a) delivery of ever-improving value to customers and other stakeholders; (b) continual improvement of overall organizational effectiveness, management capabilities, and performance (outcomes); and (c) individual and organizational learning. Goonan and Stoltz^[1] described characteristics of highly effective organizations based on a review of the Baldrige National Quality Program award recipients and applied these characteristics to health care settings. According to these authors, key results or outcomes for a health care organization include clinical quality, customer satisfaction, workforce satisfaction, financial performance and growth, organizational effectiveness, and social responsibility.

Health care organizations have been evaluated by the linking of organizational management and leadership to outcomes such as patient safety and the quality of patient care. The challenge that researchers, practitioners, and policy makers face is the identification of ways to actually improve care by improving the organizations that provide this care^[2]. In a study by Stock and colleagues^[3], the relationships between knowledge management, organizational culture, and patient safety performance were evaluated. Overall, investigators found that different dimensions of organizational culture were related to more effective knowledge management, which was, in turn, associated with better patient safety performance.

Hospital organizational management and leadership may also be associated with hospital financial performance. In its September 2011 report “Hospitals and Care Systems of the Future”, the American Hospital Association observed that the economic, demographic, and regulatory changes sweeping health care have created a pivotal moment for hospitals^[4]. To move from a volume-based to a value-based operational model, hospitals must embrace a host of new strategies — everything from physician alignment to evidence-based care practices to community-wide integrated information systems. According to the report, the successful implementation of these strategies depends on an “essential foundation”, defined by the authors as an “organizational culture of performance improvement, accountability, and high performance focus.” The report sums up the importance of this organizational ethos by stating that “the right culture will enable the transformation to the hospital and care system of the future.”

Information to date suggests that the use and application of organizational MLPS “best practices” are associated with superior outcomes, including financial performance. As such, many hospitals have aimed to improve their MLPS and engage in transformational interventions or programs designed for this purpose. From community hospitals to nationwide health systems, the management focus today is on identifying and prioritizing the adaptive strategies best suited to help their organizations adapt to the demands of 21st century health care.

Additionally, there is a push among payers at both the private and governmental levels, as well as by employers, for more integrated health care delivery systems that are held accountable for the overall cost and quality of care. Current discussions about health care reform often involve the concept of accountable care organizations (ACOs) and their ability to thwart rising health care costs and promote the quality of health care delivery. Loosely defined, ACOs may include groups of health care professionals, hospitals, and hospital systems that choose to form an alliance to provide coordinated, high-quality care to their patients.

Common to all, however, is the need for an operational structure that is geared to performance. “High-performance organizations function as integrated and aligned systems, capable of pro-active, coordinated, and creative responses to challenges”^[1]. As hospitals and health systems debate which strategies to pursue, it is clear that they concurrently need to examine whether their underlying operational structures are strong enough to enable the new methods of care delivery and higher level of performance required.

As part of its portfolio of products and services, GE Healthcare Performance Solutions delivers programs designed to help hospitals and health systems achieve and sustain market leadership. Such an engagement requires that an organization integrate three essential disciplines: (a) a management structure that connects strategy to execution and sustained results; (b) a leadership approach that creates an engaged, accountable workforce; and (c) productivity systems that drive operational rigor. This approach, focused on the transformation of MLPS, involves a substantial commitment on the part of the hospital. In this study, we aimed to assess whether hospitals that had engaged in an MLPS transformational program exhibited improved financial performance trends compared to matched peer hospitals.

2 Methods

2.1 Database and sample

Among a total of 25 hospitals that had undergone a GE Healthcare MLPS transformation intervention in the past 10 years, those that had completed the program between 2006 and 2010 were identified (*i.e.*, target hospitals). MLPS transformation was defined as substantial engagement (typically over a period of three years) in the disciplines of management, leadership, and/or productivity systems (*e.g.*, programs aimed at performance excellence, process improvement, employee engagement, or operational rhythm).

A national publically available database of hospital information was obtained, including various demographic and organizational variables for a comprehensive set of over 5,000 US-based hospitals and hospital systems. Additionally, from the Centers for Medicaid and Medicare Services cost reports, financial key performance indicators (KPIs) were obtained for the majority of these 5,000 hospitals for 2006 to 2010. From the original 25 MLPS hospitals, demographic and KPI data were available for 18 of those that had engaged in the program between 2006 and 2010. Most of these 18 target hospitals had more than 200 beds (67%) and were urban (94%) teaching (67%) institutions located primarily in the South (50%) and Northeast (39%).

Each of the 18 target hospitals was matched to corresponding or “peer” hospitals in the same geographic region using demographic characteristics, including bed size, teaching *vs.* non-teaching status, rural *vs.* urban, and case-mix index. The characteristics of these target hospitals are shown in Table 1 along with the number of peer matches obtained for each. Figure 1 depicts the geographic region for each target hospital. Nearly 3,000 hospitals were matched to one or more of the 18 target hospitals (range 21 to 1,273 peers per target hospital).



Figure 1. Target hospital geographic region map

Table 1. Target hospital characteristics ($n = 18$)

Target Hospital	Region [*] /(Rural)	Teaching	Size [#]	CMI	No. of Hospital Peers
1	1 (N)	No	M	1.5	27
2	1 (N)	Yes	L	1.9	43
3	1 (N)	Yes	L	1.7	57
4	1 (N)	Yes	L	2.0	29
5	1 (N)	Yes	L	1.9	47
6	1 (N)	Yes	M	1.5	72
7	1 (N)	Yes	L	1.4	30
8	2 (N)	Yes	L	1.7	42
9	3 (N)	Yes	M	— ^Φ	61
10	3 (N)	Yes	M	1.9	28
11	3 (Y)	No	S	1.2	49
12	3 (N)	No	S	1.6	173
13	3 (N)	No	S	1.3	475
14	3 (N)	Yes	L	1.8	76
15	3 (N)	Yes	S	1.5	29
16	3 (N)	No	S	1.5	309
17	3 (N)	No	S	— ^Φ	1273
18	4 (N)	Yes	L	1.8	21

Note. CMI = case mix index; matches were based on +/- one standard deviation.

Characteristics based on 2010 data.

* United States Region: 1 = Northeast, 2 = Midwest/Central, 3 = Southeast, 4 = West/Mountain.

Size based on number of beds, small (S) = < 200; medium (M) = 200-400; and large (L) = 400+.

Φ CMI data were missing for hospitals 9 and 17 and were not used as matching criteria.

2.2 Measures and data analysis

For each target hospital against its set of hospital peers, two financial outcomes or KPIs were compared: operating margin and expense per discharge.

Operating margin measures the fundamental profitability of a business. A positive operating margin is needed for a company to be able to pay for its fixed costs. A higher operating margin means the company has less financial risk.

Expense per discharge includes costs related to the inpatient side of operations only and the associated administrative costs. A lower overall expense per discharge is associated with lower expenses.

Change and percent change in operating margin and expense per discharge from 2006 to 2010 were computed for each target hospital and each hospital with a given peer group. Based on these change scores, each hospital was placed in ranked order within its respective peer group of hospitals and assigned a percentile within each set of the 18 target and peer hospitals. Each of the 18 target hospitals was compared to the median or 50th percentile hospital for each peer group.

3 Results

3.1 Operating margin

Operating margin results for each target hospital and its respective peer group are shown in Table 2. Overall, for the percent change in operating margin from 2006 to 2010 among the 18 target hospitals, the range was broad (from 346% to 3,024%), with a mean of 290% and median of 125%, indicating substantial improvement in overall financial performance over this period for the target hospitals.

The medians of operating margin percent change for the 18 peer group hospitals are also presented in Table 2. While it is challenging to aggregate the median data across each of the 18 peer groups and compare this aggregate data to one target hospital, data show that most of the target hospitals performed better, in general, than their respective peer groups. A total of 14 of the 18 (78%) target hospitals demonstrated a higher percent change in operating margin compared to the median change in operating margin for their respective peer groups. Figure 2 depicts the magnitude and direction of difference between the operating margin percent change for each target hospital and its peer group median.

Table 2. Operating margin for each target hospital mean and peer group median

Target* vs. Peer#	OM 2006	OM 2010	Change	Change (%)	Percentile ^Φ
2	-0.27	7.86	8.13	3024	100 th
Median	3.16	3.45	0.96	21	50 th
18	-1.12	5.49	6.61	590	100 th
Median	6.25	4.95	-0.58	-7	50 th
4	5.57	34.67	29.10	523	93 rd
Median	3.50	3.31	0.69	6	50 th
12	2.01	9.10	7.09	353	94 th
Median	4.23	4.17	0.29	2	50 th
14	3.91	14.82	10.92	279	92 nd
Median	7.39	7.38	1.11	17	50 th
10	4.81	18.45	13.63	283	79 th
Median	5.01	5.56	1.39	31	50 th
9	2.59	7.17	4.59	177	80 th
Median	5.35	5.65	1.30	22	50 th
6	2.78	7.59	4.81	173	82 nd
Median	0.77	1.64	0.87	23	50 th
16	-10.09	0.26	10.35	103	79 th
Median	3.60	3.34	-0.28	-8	50 th
8	2.19	3.73	1.54	70	81 st
Median	5.32	5.02	0.04	2	50 th
11	5.66	7.03	1.37	24	76 th
Median	6.38	3.30	-2.86	-41	50 th
1	7.17	17.70	10.53	147	59 th
Median	0.38	2.38	1.21	82	50 th
3	6.46	11.73	5.27	81.5	65 th
Median	3.50	3.45	0.96	21	50 th
5	19.76	37.05	17.30	88	62 nd
Median	2.82	3.68	1.44	41	50 th
7	16.54	17.79	1.25	8	47 th
Median	3.71	3.49	0.67	22	50 th
15	954.08	-4.66	-958.74	-100	28 th
Median	1.42	1.51	-1.73	-49	50 th
13	-2.51	-9.07	-6.55	-261	12 th
Median	3.45	1.98	-0.65	-11	50 th
17	-1.63	-7.28	-5.64	-346	8 th
Median	4.15	2.25	-1.41	-18	50 th

Note. Light gray denotes target hospitals with better performing financial outcome data compared with their respective peer group median. Dark gray denotes worse performance than the peer group median.

OM = operating margin.

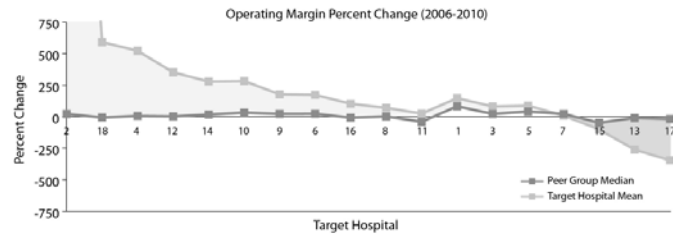
* Data for each target hospital are shown.

Median data are shown for each peer group.

Φ Percentiles for each target hospital are shown vs. the 50th percentile for each median Peer group hospital.

Figure 2. Operating margin for each target hospital mean and peer group median

Note. As detailed in Table 2, light gray denotes target hospitals with better performing financial outcome data compared with their respective peer group median. Dark gray denotes worse performance than the peer group median.



3.2 Expense per discharge

Expense per discharge results for each target hospital and its respective peer group are shown in Table 3. Overall, for the percent change in expense per discharge from 2006 to 2010 among the 18 target hospitals, the range was -20% to 38%, with a mean of 7% and median of 3%, suggesting that many of these hospitals did not experience a substantial increase in discharge-related costs from 2006 to 2010.

The medians of expense per discharge percent change for the hospitals within each peer group are also presented in Table 3. Again, despite the difficulties of comparing aggregate median data to each of the 18 peer groups, it appears evident that most of the target hospitals performed better than their respective peer groups based on lower expense per discharge. A total of 13 of the 18 (72%) target hospitals demonstrated a lower percent change in expense per discharge compared to the median change in expense per discharge for their respective peer groups. Figure 3 depicts the magnitude and direction of difference between the expense per discharge percent change for each target hospital and its peer group median.

Table 3. Expense per discharge for each target hospital mean and peer group median

Target* vs. Peer#	EPD 2006	EPD 2010	Change	Change (%)	Percentile ^d
16	11,329	9,025	-2,303	-20	96 th
Median	6,118	7,246	1,051	18	50 th
10	9,541	8,666	-875	-9	96 th
Median	9,768	11,490	1,425	13	50 th
1	8,216	7,984	-232	-3	93 rd
Median	7,953	9,133	1,143	14	50 th
4	20,793	20,125	-668	-3	97 th
Median	13,463	15,452	1,586	13	50 th
6	9,784	9,471	-312	-3	90 th
Median	9,855	11,192	1,213	13	50 th
15 [†]	45,256	9,922	-35,334	-1	71 st
Median	7,966	8,707	913	13	50 th
5	23,364	22,748	-616	-3	96 th
Median	13,319	14,884	1,397	11	50 th
14	11,858	11,909	51	0	86 th
Median	10,153	11,654	1,321	13	50 th
2	17,695	17,419	-277	-2	95 th
Median	13,319	14,884	1,420	11	50 th
12	6,694	7,052	357	5	72 nd
Median	6,782	8,020	1,103	17	50 th
9	17,505	18,696	1,190	7	66 th
Median	9,530	10,835	1,265	13	50 th
3	15,934	17,345	1,411	9	58 th
Median	13,319	14,884	1,420	12	50 th
13	6,294	7,352	1,058	17	54 th
Median	5,534	6,670	1,056	19	50 th

(Table continued on page 117)

Table 3. (continued.)

Target* vs. Peer#	EPD 2006	EPD 2010	Change	Change (%)	Percentile [Ⓞ]
8	10,434	12,142	1,709	16	43 rd
Median	11,824	13,591	1,821	13	50 th
18	7,359	9,688	2,329	32	19 th
Median	12,764	14,720	2,951	24	50 th
17	7,151	8,991	1,840	26	37 th
Median	6,214	7,554	1,149	17	50 th
7	8,352	10,184	1,831	22	17 th
Median	12,807	13,895	1,305	11	50 th
11	2,848	3,938	1,091	38	18 th
Median	5,951	7,146	1,186	22	50 th

Note. Light gray denotes target hospitals with better performing financial outcome data compared with their respective peer group median. Dark gray denotes worse performance than the peer group median.

EPD = expense per discharge.

* Data for each target hospital are shown.

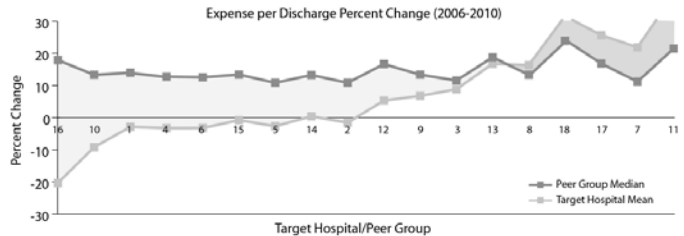
Median data are shown for each peer group.

Ⓞ Percentiles for each target hospital are shown vs. the 50th percentile for each median Peer group hospital.

† 2006 EPD data was missing for hospital 15, so instead, the change and percent change were based on 2007 EPD data.

Figure 3. Expense per discharge for each target hospital mean and peer group median

Note. As detailed in Table 3, light gray denotes target hospitals with better performing financial outcome data compared with their respective peer group median. Dark gray denotes worse performance than the peer group median.



4 Discussion

Interest in the impact of organizational factors on the delivery of care and other health care outcomes is not a new concept. A decade ago, the Institute of Medicine identified problems of health care quality as a systems problem, with each successive level of health care delivery affecting the level(s) below it. A more recent article suggested that “improvements in health care quality will require an overhaul of existing systems of care, at all levels of the system”^[2].

Results from the current study support the financial value of programs designed to integrate three essential hospital and hospital system processes: management, leadership, and productivity. In this study, hospitals that underwent an MLPS transformational program demonstrated improvements in financial performance as measured by profitability and cost containment indicators. Additionally, a majority of these hospitals performed better than their regional peers, potentially strengthening these hospitals’ market leadership. Authors of this study, which only measured financial indicators as outcomes of hospital MLPS transformational change, acknowledge the presence of other outcomes, equally meaningful and critical in the delivery of quality and cost-effective care, including patient outcomes and safety, operational efficiency, and patient satisfaction. Furthermore, the outcomes of MLPS transformational programs may also include secondary or tertiary outcomes, such as staff retention, organizational culture, and social responsibility. As such, it is evident that financial indicators are just one metric among many.

One limitation of this study was that the sample of hospitals was not randomly selected and possibly not even representative of US hospitals. MLPS transformational programs require a substantial commitment on the part of the hospital, and these target hospitals were self-selected to pay for and participate in this service provided by GE Healthcare. Aside from the initial decision to participate in the transformational process, only hospitals that are looking for new ways to operate are good candidates for future change. Also, although “readiness” may be precipitated by merger and

acquisition activities, change in leadership, or financial crisis, not all hospitals are well suited for transformation even if the opportunity exists. MLPS transformation is a multiyear endeavor that requires strategic thinking, leadership commitment to change, and organizational willingness to make change. The 18 target hospitals in this study were likely biased—they sought out experts to provide the guidance and coaching needed to understand underlying challenges and help establish and reach their organizations' goals. These organizations began by recognizing that status quo performance was not sufficient any longer, and they took action. While all hospitals may be candidates for transformation, not all hospitals are probable candidates for successful transformation. Additionally, the 18 target hospitals in this study may have been biased given their selection among the original 25 MLPS hospitals. Demographic and KPI data were only available for these 18 hospitals within the target timeframe, thereby introducing possible selection bias as well as limiting the validity of study results.

There are also limitations of this study pertaining to the study design. As mentioned earlier, financial indicators were only one possible outcome for measurement of an MLPS transformational program. While the design of this study did not address other outcomes, we were also limited in our ability to link the financial outcomes to specific changes and adaptations of system processes as part of the transformational program. GE Healthcare customizes its program interventions for each hospital or health care system based on its needs. Thus, this study cannot determine which organizational system processes should be transformed and how much of a change is sufficient to make a meaningful or noticeable change. Also, it is impossible to determine whether the observed changes in operating margin and expense per discharge are in fact interpretable, congruent with other potential outcomes (*e.g.*, patient care and safety), or directly attributable to the MLPS program. Despite these limitations, the authors believe that, at their best, the results suggest a positive relationship among the GE Healthcare MLPS transformational program, MLPS integration and alignment, and financial stability. And, at the least, the results may simply suggest an association between hospitals committed to and ready for systems transformation and financial upturn during the timeframe in which these financial data were obtained.

Future research should be conducted to review and explore the outcomes and factors associated with MLPS, and specifically the GE Healthcare MLPS transformational program. One such research study would be to implement a survey or tool among hospital administration and staff currently involved in a transformational program. The Strategy and Leadership Systems Capability Evaluation (CE) ^[5] is a brief and psychometrically validated survey developed to assess management and leadership systems at health care institutions. The 29-item CE survey measures 12 strategy and leadership system concepts, including initiatives and metrics, operating calendar, strategy and operations, operating reviews and mechanisms, setting expectations, values and behaviors, performance culture, leadership review, leadership development, human resources strategy, performance excellence, and continuous improvement. Authors of the CE purport that the CE can be used to identify particular and overall strengths and weaknesses at the organizational level and that scores can easily be linked and aligned to other measurements of institutional performance and effectiveness, such as patient and workforce satisfaction and financial performance and growth. Linking scores on the CE with KPI outcomes, such as operating margin and expense per discharge, could better support the hypothesized relationship between MLPS and financial outcomes.

MLPS transformational programs may have the potential to improve hospital financial performance as demonstrated by this analysis of financial KPI trends. ACOs purport to change the direction of health care delivery from a fee-for-service model to a shared savings plan that rewards improvements in outcomes and efficient delivery of care. To successfully implement an ACO, health care providers and organizations must integrate their MLPS systems. MLPS transformation may help develop and form a basic infrastructure needed for further mobilization and movement toward the formation of a well-aligned and strategic ACO.

While hospitals in this study were self-selected and likely in a better position for change and improvement, the overall value of a MLPS transformational program was suggested. Additionally, the value of programs such as these may extend to other outcomes such as quality of care, patient satisfaction, and employee retention and also lend to an organization's

ability to perform successfully as part of an ACO. The experience of GE Healthcare outlined in this study suggests that virtually every health care organization can benefit to some degree from operational transformation, and that more effective management, leadership, and performance structures can play a role in promoting higher-quality care and better financial performance—benefiting patients, staff, and the long-term viability of the organization. Future research should focus on the standardized measurement of operational changes and transformation, as well as other nonfinancial outcomes, to assess the potential impact of different types of programs and process implementations on different types of indicators.

Competing interests

The authors declare that they have no competing interests.

References

- [1] Goonan, K. J., Stoltz, P. K. Leadership and management principles for outcomes-oriented organizations. *Medical Care*. 2004; 42(4 Suppl): III31-38. PMID:15026669.
- [2] Hearld, L. R., Alexander, J. A., Fraser, I., Jiang, H. J. Review: how do hospital organizational structure and processes affect quality of care? : A critical review of research methods. *Medical Care Research and Review*. 2008; 65(3): 259-299. PMID:18089769. <http://dx.doi.org/10.1177/1077558707309613>
- [3] Stock, G. N., McFadden, K. L., Gowen, C. R. Organizational culture, knowledge management, and patient safety in U.S. hospitals. *Quality Management Journal*. 2010; 17(2): 7-26.
- [4] American Hospital Association. Committee on Performance Improvement. *Hospitals and care systems of the future*. Chicago: IL: American Hospital Association. 2010.
- [5] Coon CD, Bokowy KL, Horblyuk R, Zisman RS, McLeod LD, Brown TM. The development and initial assessment of the strategy and leadership systems capability evaluation survey. *Health Care Manag (Frederick)*. 2012; 31(4):332-41.