"Gainsharing" and Patient Satisfaction

Port Arthur, TX, Hospital Studied The Effects of Employee Incentives

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Patient satisfaction is becoming a key success factor for healthcare providers.[1] In response, many hospitals are moving to pay-for-performance and team-oriented incentive plans. "Gainsharing" is one of the prominent plans, but the question remains: Can a gainsharing plan really provide hospital employees with the proper incentives to enhance organizational performance?

According to a 1995 survey of more than 300,000 healthcare employees, the answer is a qualified yes,[2] but little research has appeared related to gainsharing and healthcare. This study sought to determine if gainsharing, as experienced in a community hospital, might be linked to patient satisfaction. Data were obtained from a longitudinal survey of 16,349 patients at the hospital two years before and two years after the installation of the gainsharing plan. Hospital employees involved in the plan were also interviewed. A statistical relationship between gainsharing and patient satisfaction appeared in six of the functional areas in the facility. No relationship linked overall hospital patient satisfaction with the plan, however.

Background

First we will define gainsharing, consider the plan in the context of healthcare, and relate factors contributing to its success.

Gainsharing Gainsharing is an organizationwide method of building employee team involvement using a bonus formula[3] to reward employees for improved organizational performance.[4] Gainsharing has been widely researched as a means to motivate employees.[5] If implemented properly, it can provide an organization with improved employee morale,[6] enhanced communication,[7] and improved productivity and earnings.[8]

All gainsharing plans developed from the work of Joseph Scanlon.[9] The Scanlon plan assumes that no one single standard employee bonus formula will apply to all situations. The most commonly applied Scanlon plan employee bonus formula (*gainsharing ratio = labor costs ÷ sales value of production*) is the result of a firm's cost of labor divided by the company's sales value of production. The Rucker plan, an alternative, tracks the value added to a product as a measure of productivity. The Improshare plan measures changes in the relationship between outputs and the time required to produce those outputs. There are a variety of other custom plans which borrow from these three.[10]

Gainsharing in the Healthcare Environment Gainsharing plans have a history of success in nearly all industries, but only recently have hospitals become interested.[11] Although gainsharing has been much discussed in healthcare circles, it appears to have been implemented in few hospitals nationwide. Markham, Scott and Little[12] isolated only nine gainsharing plans in 1991. Barbusca and Cleek[13] identified fourteen a few years later. Administrators may be hesitant to implement plans because hospitals are process-driven organizations. In order to increase productivity, the processes themselves must be changed.[14] It is often difficult to tie incentives to behaviors which result in productivity increases and, therefore, reward employees for the same.

Several factors have created the need for incentive plans in the healthcare industry. Government agencies, insurers and health maintenance organizations are demanding performance measurement programs and rating facilities against one another. As well, healthcare has evolved into a system of specialties. The resulting compartmentalization has yielded a decline in employee team effort, in some instances diminished care, and raised patient dissatisfaction. Gainsharing holds promise of remedy.

Factors Contributing to Gainsharing Success Robert Masternak,[15] comparing the gainsharing experiences of seventeen different firms, identified a number of factors fostering gainsharing. Up front, he found the more successful plans utilized a cross-functional team to design, develop, and communicate the plan to all employees. Those facilities which relied solely upon a human resources department to design and implement their plans soon found the programs on the brink of failure. Commitment of employees[16] seems to follow open communication.[17]

Departmental, team, and organizational rewards and recognition can be helpful when linked to plan goals.[18] No employee bonus formula is more effective than another. However, the level of performance that must be exceeded to generate a bonus payout should be perceived as fair and attainable by participants. Rewards do motivate and change behaviors, with bonus plans typically doing a better job of motivating employees than pay raises or salary increase plans.[19] Awards of company stock have an advantage over cash in that they tend to increase a sense of employee involvement.[20] Pay is best placed near the behavior desired. Therefore, the more frequent the payouts, the better the motivation.[21] It is advisable to implement a plan when business conditions are favorable, almost guaranteeing an initial payout.[22] Recognition of individual contributions may disrupt vital team development necessary to the plan.

The Hospital

The focus of this study was a full-service, community-based hospital licensed for 278 beds, but containing 202 actually open and available. A recent study, including the Houston Medical Center facilities, rated the hospital under study as one of the best in the region in terms of clinical outcomes.[23] The major financial indices showed the hospital to be a well managed, tightly run facility.[24]

Organizational Effects of Managed Care In 1994, the hospital began to experience the effects of managed care, including a migration from inpatient stays to outpatient procedures, and a reduction of net revenue due to fee capitation. Hospital units were closed or combined to lower staffing levels in both nursing and ancillary departments. Internal patient surveys linked these changes to decreasing levels of patient satisfaction. A cross-functional team was formed in response and recommended, among other things, the installation of a gainsharing plan.

The Gainsharing Plan A gainsharing plan, referred to by the hospital as the Success Sharing Plan (SSP), was drafted for fiscal year 1997. The process used to design the hospital's plan was similar to that proposed by Masternak.[25] A cross-functional design team in the hospital worked on the gainsharing plan for two months prior to making their recommendations to senior management. Much consideration was given to the financial status of the hospital and the predicted future of the overall healthcare environment. The team reviewed literature about gainsharing plans during the design process and learned about the motivational power of significant payouts to employees as confirmed by McAdams.[26]

SSP, as conceived, covered all nonmanagement employees of the hospital and provided for an annual employee bonus payout if the budgeted excess revenue over the expense target was achieved and a defined patient satisfaction target was met. This was in contrast to the findings of McGrath[27] that frequent payouts are better motivators and counter to Lawler's[28] suggestion that rewards be offered near terminal behavior(s).

Prior to the implementation of the SSP, all employees attended an eight-hour education session developed by a team of 33 staff-level employees from various departments in the hospital. These employees, called Service Excellence Advisers (SEAs), completed an extensive course to teach, in turn, the patient satisfaction materials.

Table 1

Survey Response Rate by Fiscal Year (July - June)

Year	Surveys Mailed	Surveys Received	Response Rate
FY 1995	4,464	1,265	28.30%
FY 1996	4,194	1,104	26.30%
FY 1997	3,770	810	21.50%
FY 1998	3,921	987	25.20%
Total	**16,349**	**4,166**	**24.48%**

To keep up the momentum after the initial training period, monthly activities highlighted different aspects of good patient care and the relationship to the gainsharing plan. These activities were in accordance with the findings of Collins, Hatcher, and Ross[29] concerning the importance of employee involvement. The SEAs were primarily responsible for maintaining an environment of frequent and open communication, which Rauglas[30] found contributed significantly to improvements in productivity. The SEAs devoted considerable time and energy to this effort, and they received unofficial quasi-management status.

The SSP was implemented for fiscal year (FY) 1997 (July 1996 through June 1997). The hospital

tracked and measured only the percentage of responses to one survey question: "Would you recommend this hospital to your family and friends if they needed hospital care?" The question had four possible responses, ranging from "Definitely would" to "Definitely would not." The plan called for the hospital's management to set an annual target for the percentage of "Definitely would" responses. The plan employee bonus payout was tied to the response level for that particular question. In both FY 1997 and FY 1998, the patient satisfaction targets were met. However, the excess revenue over expense targets were only met in FY 1997. Consequently, the percentage payout was at the maximum level for FY 1997.

Data were obtained from patient satisfaction surveys over four years.

Hypotheses

This study sought a response to seven different hypotheses relating to the implementation of the gainsharing plan (**Table 4**, p. 48). H_{01} through H_{06} related to patient satisfaction with six departments: nursing, housekeeping, food service, admissions, laboratory, and imaging. H_{07} was related to patient overall satisfaction with hospital service(s). All of the null hypotheses presented posit no difference in the survey question means between the data before and after plan implementation.

Methodology

Data were obtained from hospital patient satisfaction surveys collected from discharged patients over a four-year period. Employee interviews augmented the findings of the data analysis.

The Survey Patient satisfaction data were collected using the same instrument between fiscal years 1995 and 1998. The survey instrument was mailed to each patient within two weeks of discharge. Data were collected two years prior and two years subsequent to implementation of SSP, the hospital's gainsharing plan. This analysis was conducted using 14 of the more than 70 available questions on the survey. The questions chosen related to patient satisfaction in the previously listed functional areas. The survey questions were constructed using a five-point Likert-type rating scale with possible responses of "Poor," "Fair," "Good," "Very Good," and "Excellent." The only exceptions to the five-point scale were questions relating to overall satisfaction with the hospital.

A total of 16,349 surveys were mailed with a 24.48 percent response rate (see **Table 1**, p. 43). Survey response rates for all four years examined represent statistically significant samples when viewed as percentages of total adjusted patient discharges. An assumption made for the purposes of this study, given the large size of the sample, is that the population is normally distributed.

The Interviews

To gain a better understanding of employee perceptions of the incentive plan, interviews were conducted with 25 individuals from the primary functional areas who were employed from the design of SSP through completion of the survey in 1998. These interviews were used to compare employee perceptions with the conclusions drawn from the statistical portion of the study. The interview guide contained both open-ended questions and a Likert-like rating scale to ascertain SSP congruence with Masternak's[31] findings of plan success. Participants could provide criticism(s) anonymously or otherwise. The employees chosen for participation in the interview process were from the same departments for which data were collected and analyzed.

Scope and Limitations of the Study

This study is based on the experience of a single, not-for-profit, community hospital. As documented earlier, few hospitals in the United States have attempted gainsharing. Fewer still have the necessary history of patient satisfaction data to attempt a valid statistical analysis.

A number of limitations to this study are evident. First, there is the possibility of inconsistent communication of the gainsharing plan to employees, which may have resulted in uneven plan effectiveness. Second, patients who were admitted for outpatient procedures, who died during hospitalization, who were discharged from the hospital's behavioral health unit, or were discharged directly to a nursing home were

excluded from the survey process. Next, the survey instrument was administered only in English. Some Vietnamese and Spanish speakers were probably omitted. Further, there is the possibility of confusion among respondents concerning the functional job categories. Many patients consider all caregivers nurses, although they might be respiratory therapists, pharmacists, nurses, or laboratory technicians. In regard to the survey instrument itself, most of the questions used a five-point Likert scale. However, questions dealing with overall patient satisfaction supporting H_{07} relied on a four-point Likert scale. Conclusions based on a three- or four- point Likert scale may be less reliable than those based on a five-point scale, since the five-point scale uses finer distinctions.[32] Finally, any material change in overall employee satisfaction during the time frame might well have resulted in a corresponding change in patient satisfaction. Although employee satisfaction surveys were routinely conducted during the time frame of this study, the survey instrument itself was changed, losing any chance of comparability. Consequently, the effects of employee satisfaction as relates to patient satisfaction in this study are unknown.

Findings

Calculated means issuing from the satisfaction survey were analyzed using the nonparametric two independent samples test. First, the satisfaction means before plan implementation are compared to the means after plan implementation for each hypothesis. Second, the same test is used to compare each year of the four-year time frame for each hypothesis. This nonparametric test can be used for samples that do not come from normal populations. However, the test assumes that the two distributions have the same shape, although not necessarily normal.

The results of the two independent samples test (see **Table 2**) do not support the first six hypotheses, but do support H_{07} concerning overall satisfaction with hospital service(s). This analysis shows that there is a statistical difference between the means examined for the two years of data prior to plan implementation versus the two years after implementation for the first six functional categories. The analysis relating to overall patient satisfaction indicates there is no statistical difference in the means of the four years of data.

The z values for nursing, admissions, housekeeping, laboratory, and imaging services were all between −5.076 and −5.940. These values indicate a significant statistical difference between the means in these categories. The analysis of the data for food services, although still statistically significant, is less so than for the other functional areas, with a z value of -2.971. The z value for overall hospital satisfaction of -0.114 indicates there is no statistical difference between the means of the pre- and post- implementation data.

Comparison of Individual Fiscal Year Data To compare the satisfaction means by fiscal year, the two independent samples test was used to compare each of the four years of data against one another to ascertain any differences in means. **Table 3** (see p. 46) includes a summary of the z statistics and significance levels for the patient satisfaction data by functional category, pre-plan and post-plan.

Table 2

Patient Satisfaction Pre-Plan vs. Post-Plan by Functional Category

Functional Category	z Value	Significance	Mean Ranks	
			Pre-Plan	Post-Plan
Nursing	−5.808	.000	12.77	36.23
Admissions	−5.878	.000	12.63	36.38
Housekeeping	−5.940	.000	12.50	36.50
Laboratory	−5.438	.000	13.52	35.48
Imaging	−5.076	.000	12.98	36.02
Food Service	−2.971	.003	18.50	30.50
Overall Satisfaction	−0.114	.910	24.27	24.73

Nursing The data relating to nursing satisfaction in Table 3 indicates a statistically significant difference in means between all fiscal years other than 1997 and 1998. The test indicates that there is a difference in means between the pre-implementation and post-implementation data, which failed to support H_{01} concerning patient satisfaction with nursing service. The significance of .225 for the comparison of FY 97 and FY 98 indicates that there is no statistically significant difference in means for the post-implementation years. However, the test indicates that there is a statistically significant difference between the means of FY 95 and FY 96, which were both pre-implementation years.

Admissions When the two independent samples procedure was used to analyze the data relating to admission services, the results, shown in Table 3, indicate a significance level of .686 for the comparison of FY 95 and FY 96. The significance level for the comparison of data from FY 97 and FY 98 is .225. These two significance levels indicate no statistically significant difference in means. However, the data does show that there is a statistically significant difference in means between the FY 95 and FY 96 pre-implementation data versus the FY 97

and FY 98 post-implementation data. These results did not support H_{02}.

Housekeeping The two independent samples analysis of the individual fiscal year data for satisfaction relating to housekeeping services indicates a statistical difference between the pre-plan implementation means versus the post-plan implementation means. The only two years of data that did not show any statistical difference were FY 97 and FY 98 with a significance level of .488. The test did not support H_{03}.

Laboratory When the two independent samples procedure is used to analyze the data for patient satisfaction relating to laboratory services, the results indicate a statistical difference between the pre-plan implementation means versus the post-plan implementation means. The significance level for comparison of FY 95 to FY 96 is .417, which shows no significant difference. This is also true for FY 97 and FY 98, which show a significance of .908. These findings are not supportive of H_{04}.

Imaging The results of the fiscal year comparison indicate a statistical difference between the pre-plan implementation means versus the post-plan implementation means. Fiscal years 95 and 96 as compared with FY 97 and FY 98 show a statistically significant difference at a level of .000. These results do not support H_{05}.

Food Service When the two independent samples procedure is used to analyze the data for patient satisfaction relating to food services, the results indicate a statistical difference between the pre-plan implementation means versus the post-plan implementation means. The FY 95 data compared to the FY 96 data returns a z statistic of

Table 3

Patient Satisfaction by Functional Category for Fiscal Years 1995 to 1998

Category	FY 95	Significance	FY 96	Significance	FY 97	Significance
Nursing						
FY 96	-3.128	.002				
FY 97	-3.815	.000	-4.133	.000		
FY 98	-4.161	.000	-4.162	.000	-1.213	.225
Admissions						
FY 96	-0.405	.686				
FY 97	-4.104	.000	-4.161	.000		
FY 98	-4.045	.000	-4.160	.000	-1.213	.225
Housekeeping						
FY 96	-2.946	.003				
FY 97	-4.157	.000	-4.157	.000		
FY 98	-4.158	.000	-4.158	.000	-0.488	.488
Laboratory						
FY 96	-0.812	.417				
FY 97	-4.162	.000	-4.132			
FY 98	-3.468	.001	-3.466	.000	-0.116	.908
Imaging						
FY 96	-0.956	.339				
FY 97	-3.961	.000	-3.697	.000		
FY 98	-4.162	.000	-4.160	.000	-2.314	.021
Food Service						
FY 96	-1.474	.141				
FY 97	-1.213	.225	-2.196	.028		
FY 98	-2.113	.035	-2.804	.005	-1.388	.165
Overall						
FY 96	-1.708	.099				
FY 97	-1.245	.213	-0.925	.355		
FY 98	-0.781	.435	-1.415	.157	-0.607	.544

-1.474 with a significance of .141 showing no statistical difference. The same is true for FY 97 as compared to FY 98, with a z statistic of -1.388 and a significance level of .165. The results of the statistical analysis of the food service data do not support H_{06}.

Overall Patient Satisfaction Comparison of the individual fiscal years overall patient satisfaction data using the two independent samples test does not show any statistically valid difference in means. There were no comparisons between any of the four years of data which did show a significant difference in means. Accordingly, these results support H_{07}, the hypothesis that there is no difference between the means of the data before and after implementation of the gainsharing plan.

Summary of Statistical Analysis The two different methods used to analyze the data, comparison of the two years prior to plan implementation (1995-1966) versus the two years post-implementation (1997-1998), and the comparison between each individual year, are both in agreement in regard to the seven hypotheses postulated. As seen in Table 4, the two methods reject the first six hypotheses, which state that there is no difference between the means of the patient satisfaction survey for the years before the gainsharing plan implementation versus the monthly satisfaction means after plan implementation. However, both methods accept H_{07} because no statistically significant difference in means could be found.

Employee Interviews Employee interviews revealed a nearly unanimous perception that SSP, the gainsharing plan, had increased the levels of patient satisfaction both in their own functional areas and with services of the hospital overall. Although these perceptions were borne out by the statistical analysis performed for the functional areas, where relationships were found to exist between plan implementation and satisfaction increases, it was not found true for the category of overall patient satisfaction.

It is interesting to note that there were differences in the number of positive responses related to plan implementation, communication, and management support among members of the various functions represented by the employees interviewed. The employees in the nursing group, generally among the most highly compensated staff positions in the hospital, were also the most negative in their comments. There were significant differences of opinion among the laboratory employees, whose compensation is also higher than average, on the overall effectiveness of the plan. On the other hand, housekeeping and food service employees, typically the lowest paid employees in any hospital, seemed very positive about SSP results. The exception came from the imaging department. These employees tend to be well compensated but were also extremely positive about the gainsharing plan. Although it is difficult to draw strong inferences based upon the limited data gleaned from these interviews, it seems that the SSP was both more positively received and more motivating for employees at the lower end of the pay scale. This may be true even though the payout available with this particular plan is a flat percentage of earnings and accordingly pays more to employees with higher earnings. Another mitigating factor may be that the more highly paid employees are also paying a higher marginal tax rate and consequently realize a proportionately smaller net payout, thus providing less of an incentive.

> Nursing group employees were the most negative in their comments.

Differences in management and communication styles between department directors in the hospital may provide a clue to these variations in levels of plan support. As pointed out earlier, communication plays a vital role in the success or failure of any gainsharing plan. It is quite probable that some department directors were more adept at communication, which may have resulted in a more supportive staff.

Summary of Findings

This study has identified links between gainsharing in a hospital setting and patient satisfaction. The data and employee perceptions seem to agree at critical points.

Survey Results It is apparent from the analysis that the plan had a positive effect on patient satisfaction as it related to the basic functional categories: nursing, admissions, housekeeping, food service, laboratory, and imaging. The statistical significance

relating to the analysis of data for these functions is high enough to establish a correlation between plan implementation and subsequent increases in patient satisfaction. The employee interviews added further credibility to these findings, with nearly unanimous agreement among those interviewed that plan implementation had had a positive effect on patient satisfaction. Although the employees who were interviewed differed considerably in their perceptions about plan communication and support, the one clear area of agreement was that of improvements in patient satisfaction.

The major surprise in the data was the lack of correlation between the plan implementation and *overall patient satisfaction for the hospital, after* finding a positive correlation for all six of the functional areas reviewed. First, the survey questions which were used as a determination for overall hospital patient satisfaction were based on a four-point Likert scale instead of the five-point scale used for all of the other questions analyzed in this study. A four-point scale does not yield results as reliable as a five-point scale.[33] Had a five-point scale been used for the overall satisfaction analysis, the results may have shown a different relationship with the gainsharing plan. Second, overall patient satisfaction depends on many other hospital services than those reviewed in this study. Although all of the six functional areas reviewed showed improvements in patient satisfaction, other services provided by the hospital (emergency services, outpatient testing, non-invasive cardiology, and EEG) were not included in the survey instrument. Such may have moderated patient responses. Difficulties experienced by patients in some of these areas may have diluted the positive effects of the other services.

Employee Interview Response It appears that employees of the hospital could fairly accurately judge patient satisfaction changes in their own departments. It was likely more difficult for these employees to ascertain changes in overall hospital patient satisfaction. It is clear that managers of the hospital devoted a significant amount of time and resources to employee education in patient satisfaction issues. It is also clear that communication of the *gainsharing plan was a high priority. However,* employee education of patient satisfaction issues and communication of the plan were handled in two very dissimilar ways. The education was conducted in a very methodical, controlled manner by a few employees using carefully scripted material in groups of 25 to 50 employees. The communication of the gainsharing plan, however, was left to department directors and the SEAs, who relayed the details of the plan to employees in their areas. This difference in communication methods may partially account for some of the variations among the employees interviewed.

Conclusions

The success of this particular gainsharing plan may be a result of any one or combination of factors: proper plan design through the input of a

Table 4

Summary of Hypotheses Testing

Hypothesis	Accept/Reject
H_{01} There is no statistical difference in the monthly means of the nursing care satisfaction questions between the data collected before and after gainsharing plan implementation.	Reject
H_{02} There is no statistical difference in the monthly means of the admission satisfaction questions between the data collected before and after gainsharing plan implementation.	Reject
H_{03} There is no statistical difference in the monthly means of the housekeeping satisfaction question between the data collected before and after gainsharing plan implementation.	Reject
H_{04} There is no statistical difference in the monthly means of the laboratory satisfaction question between the data collected before and after gainsharing plan implementation.	Reject
H_{05} There is no statistical difference in the monthly means of the x-ray patient satisfaction question between the data collected before and after gainsharing plan implementation.	Reject
H_{06} There is no statistical difference in the monthly means of the food service patient satisfaction question between the data collected before and after the gainsharing plan implementation.	Reject
H_{07} There is no statistical difference in the monthly means of the overall satisfaction questions between the data collected before and after the gainsharing plan implementation.	Accept

cross-functional team, motivational impact of the potential payout, impact of the patient satisfaction education performed by the SEAs, or communication of the plan which engendered widespread support among the staff employees. The employee interviews indicated that a potential payout was indeed a strong motivational force, even though the payout was only made on an annual basis. The interviews revealed mixed results on whether or not the plan was effectively communicated. A major unknown factor is the impact of employee patient-satisfaction training on the outcome of the satisfaction increases in the individual functional areas. Did the gainsharing plan provide the impetus for change, or was it more a factor of improved organizational communication or perhaps a more focused educational process? Since the communication and educational processes are inextricably linked with plan implementation, the question remains unanswered.

Few service organizations have established effective gainsharing plans, and fewer still have any data which can be analyzed to determine the effectiveness of the plan. Very few gainsharing plans have been implemented in hospitals, and few, if any, hospitals have successfully linked the implementation of a gainsharing plan to statistically proven service enhancements. This study shows that a properly implemented gainsharing plan well might positively impact patient satisfaction in a hospital environment. □

NOTES

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