EXPLORING PATIENT SATISFACTION IN HOSPITALS

A CASE STUDY OF EMERGENCY

ROOM SATISFACTION

THESIS

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by

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Healthcare is an industry searching for quality. Patient satisfaction is just one measure of healthcare quality. Recently, the Center of Medicare and Medicaid has proposed a new standardized patient satisfaction survey-Hospital Consumer Assessment of Health Plans Surgery (H-CAHPS). H-CAHPS will be used to produce quantifiable data on patient perspectives of hospital care. This will allow meaningful comparisons between hospitals. H-CAHPS was written primarily for inpatients. This project was a case study of Emergency Room patient satisfaction at Central Texas Medical Center in San Marcos, Texas. The goal was to determine key predictors that determine patient

satisfaction using a questionnaire designed to imitate a possible H-CAHPS for Emergency Departments. Two regression models were created to predict emergency department satisfaction. The physician-patient relationship and compassion are two of the key predictors of patient satisfaction. By creating prediction models for patient satisfaction, hospitals will be able to focus resources more efficiently and begin improvement projects to increase healthcare quality.

CHAPTER 1

INTRODUCTION

Many key professionals, mainly physicians and nurses, have been romanticized in the eyes of society and are believed to be near perfect. That is, until the 1999 congressionally chartered publication by the Institute of Medication entitled "To Err Is Human" society began to question the foul-ability of healthcare professionals. Medical errors and poor patient satisfaction with medical care go hand in hand. There is growing alarm in the healthcare industry concerning the measurement, publicity, and validity of patient satisfaction. Billboards, television, internet and radio have become a public forum for the healthcare industry in an attempt to change patient perceptions of the medical profession Healthcare is an industry which is responsible for 13 percent or $1 trillion of the annual U.S. Gross Domestic Product. An industry of such size and importance must pay attention to the measurement of customer (patient) satisfaction and the quality of their product.

Like any other industry, U.S. healthcare is subject to many regulations Regulations for the U.S. healthcare industry come in many forms from several organizations, private and governmental. For example, hospitals are regulated by the Centers for Medicare and Medicaid Services (CMS), the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), the individual State Department of Health, as well as many federal and state laws. With each new regulation, healthcare has

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had to transform itself from a perceived "service industry" into more of a product related industry The American healthcare industry has a goal to provide access to high quality, low cost healthcare for consumers. Regulatory agencies have increased their focus on healthcare quality in recent years. These agencies place tremendous pressure on hospitals to comply with their quality related regulations and in turn hospitals are responding. There is an increasing awareness that we can improve the quality of care and that we must pay attention to patient satisfaction concerning that care.

The American public's perception that healthcare is a "right" as opposed to a privilege has a tremendous impact on the expectation of the customer that they always get the very highest quality healthcare. Whereas in other industries lower quality may be an acceptable trade-off for a lower price, healthcare consumers expect and demand the highest level of quality Access to the highest quality of healthcare at the lowest cost is seen by many as an issue approaching that of civil or human rights.

Patient safety is at the forefront of quality concerns in healthcare. Television shows such as 20/20, Dateline and 60 Minutes have exposed the American public to gross medical mistakes. Names such as Ben Kolb, Josie King, Betty Lehman, Willie King and others have become the faces of serious medical errors. Their families have used their tragedy to educate society on the importance of patient safety. These cases have brought a level of awareness to the public that has rightly placed increasing pressure on the healthcare industry to decrease the number of these sentinel events, defined as "unexpected occurrence involving death or serious physical—including loss of limb or function—or psychological injury, or the risk thereof."(JCAHO, 2005) With medical

errors becoming sensationalized by the media, the public's perception of patient satisfaction is a key indictor for hospital success.

Publicly Reported Data

The once ignored threat of publicly reported data has now become a reality. Websites like Healthgrades, CMS, and Texas Medical Foundation (TMF) are revealing information about hospitals and physicians that were once closely guarded in secret. Patient satisfaction has quickly evolved from hearsay in social settings to publicly reported data on Internet websites. One of the pieces of publicly reported data is called Core Measures data. Core Measures show the levels for critical indicators related to patient diagnoses. The diagnosis places the patient on a particular clinical pathway. These clinical pathways are accepted evidence-based courses of treatment for specific diseases. For example, one of the core measures for Community Acquired Pneumonia is antibiotic administration following the time of patient arrival. Research has shown that if antibiotics are given within four hours from the time of arrival for a patient with Community Acquired Pneumonia then the outcomes are greatly improved. CMS measures this antibiotic administration time and the core measure data are available for public viewing and hospital comparison. While Healthgrades does not report solely on core measures data, the website is much more user friendly. Healthgrades uses a 5-star system to compare healthcare facilities and physicians in a variety of categories   A Rand Corporation study finds that 70 percent of Americans turn to the Internet for healthcare decisions; 60 percent may also turn to their physicians. This places pressure on hospitals to achieve optimal scores on any publicly reported data indicators. Publicly reported

Internet web-based data are another important reason for concern of patient satisfaction scores.

H-CAHPS

Moving from medical indicators, the public is pushing for the healthcare industry to publicly report patient satisfaction data. The current state of measuring patient satisfaction is not standardized. Hospitals across the country use different methods, companies and polling systems to measure patient satisfaction. Some use external polling methods, while others rely on internal polling methods. Some use telephone questionnaires to call patients and some mail out questionnaires. This variation makes it impossible for the public to adequately compare hospital patient satisfaction scores across the industry.

Many hospitals contract with Gallup to analyze their patient satisfaction data CMS is proposing a new standardized patient satisfaction survey-Hospital Consumer Assessment of Health Plans Surgery (H-CAHPS). H-CAHPS will be used to produce quantifiable data on patient perspectives on hospital care. This will allow for meaningful comparisons between hospitals. Comparisons between hospitals can help consumers make more informed decisions regarding their healthcare needs. It is important to get a baseline of the differences between patient satisfaction scores by both the Gallup and H-CAHPS methods. This will show what improvements need to be made in preparation for H-CAHPS as a new, standardized method of comparing hospital patient satisfaction

Central Texas Medical Center–San Marcos, Texas

Central Texas Medical Center (CTMC) is a 113 bed hospital located in San Marcos, Texas along Interstate 35 between two major cities: Austin and San Antonio. It is part of the Adventist Health System (AHS). CTMC serves the surrounding communities including: Wimberley, Lockhart, Luling and Buda/Kyle. This hospital offers services ranging from Intensive care, Outpatient surgeries, Maternal Child Health to Emergency care. Through support from AHS, CTMC is able to embark on industry leading ventures such as implementing a new electronic medical record system, make available expensive new diagnostic technology such as PET scans, and experiment with new initiatives to measure patient satisfaction.

The Emergency Department at Central Texas Medical Center has 20 beds. five trauma beds, two OB/GYN rooms, five minor emergency beds, and eight treatment rooms. The Emergency Department is divided into two distinct sides: urgent care and minor emergency or "fast track". Nurse Practioners and Physician Assistants treat patients in the minor emergency portion of the Emergency Department, while physicians treat the patients on the urgent care portion.

Central Texas Medical Center's ED has been a focal point of process improvement projects over the last year. The Emergency Department provides 62% of admissions to the hospital. The ED sees 35,000 patients each year and the number continues to grow. Due to the fact that the Emergency Department is the first experience and/or only experience for many community members, the hospital has placed a priority on improving patient satisfaction scores among ED patients. Patient satisfaction is just

one step that is part of an overall strategic plan to improve community perception of

Central Texas Medical Center as a "preferred" hospital.

Research Questions

1) What are the key drivers for determining patient satisfaction scores?

2) What areas of the ED are most important to overall satisfaction?

Importance of Research Questions

These research questions are important to hospitals as the environment of publicly

reported data becomes more intense. Hospitals are looking for ways to improve the

public's perception of the hospital. Higher patient satisfaction equates to increased

patients, followed by (hopefully) increased data. This is a recent trend of competition

within the hospital industry, a trend that is sending hospitals in search of answers. By

discovering the predictive value of internal data, better decisions can be made for the

future of the healthcare facility with regards to patient satisfaction

Limitations to Research

There are limitations for this study due to the size of the study sample. Grievance

data was not computerized until January 2004. Grievances are, further, only kept for 2

years on paper Grievance data older than January 2004 is not available. Gallup data are

only published quarterly in aggregate form, whereas, data collected using the HCAHPS

survey instrument will be available in aggregate form on a weekly or more frequent basis

Sample size may also present a limitation to this study due to patient numbers attending the ED.

CHAPTER 2

REVIEW OF RELATED LITERATURE

Role of the Joint Commission on Accreditation of Healthcare Organizations

In order for a hospital to receive reimbursement from Medicare and Medicaid, a

hospital must typically be accredited by the Joint Commission on Accreditation of

Healthcare Organizations (JCAHO), although a relatively new alternative is meeting the

quality standards developed by the International Standards Organizations (ISO).

Through its accreditation process, Joint Commission on Accreditation of Healthcare

Organizations is committed to improving patient safety. One can ask if the ISO

certification alternative has had some influence upon the increased concern for patient

safety by JCAHO. ISO standards for hospitals were developed following input from

large manufacturing industries. These standards reflected the emphasis on quality found

in manufacturing. Following the publication of these standards by ISO, JCAHO

increased their emphasis on quality measures. Whether the ISO standards "forced" a

greater focus on quality and patient satisfaction or not, the fact remains that healthcare

has now embraced the measurement of both quality and patient satisfaction.

Recently, JCAHO revised the accreditation process to become more focused on

the quality of patient care. After almost three years of analysis of how the accreditation

process can foster ongoing care enhancement, JCAHO released "Shared Visions-New

Pathways," the new survey system which became effective in January 2004. The new procedure includes a facility self-assessment which is completed by the hospital halfway through the three year accreditation cycle. By requiring hospitals to perform self-assessments, JCAHO has placed the responsibility of compliance on the hospitals. Eighteen months into the three year cycle, hospitals will report compliance via an extranet in a step by step process. There is no penalty for reporting problems during the midpoint self assessment. Hospitals will also be responsible for the implementation of a "priority focus process."

Another new aspect of the accreditation onsite visit is the JCAHO tracer methodology. The surveyors will follow active patient records throughout the hospital's processes. Along the way, surveyors will ask questions to staff regarding the individuals' care processes. The surveyors will also confirm the implementation of corrective action identified as necessary during the self assessment and provide guidance on priority areas.

Joint Commission measures the improvement in patient safety by a significant reduction in the number of medical errors that result in harm to patients. JCAHO even outlines the steps that must be taken to achieve this significant reduction. First, the errors that occur must be identified. Second, an analysis of each error must be completed to determine the underlying factors or "root causes" that, if eliminated, could reduce the risk of similar errors in the future. The data needs to be compiled to examine error frequency and types of root causes. Third, the information needs to be disseminated about these errors and their root causes to permit healthcare organizations to redesign their systems

and processes to reduce the risk of future errors. And fourth, periodic assessment of the

effectiveness of the efforts taken to reduce the risk of error needs to be completed.

(JCAHO, 2005)

In an attempt to focus the concentration of healthcare organizations on medical

errors, Joint Commission has identified seven problematic areas in the healthcare

industry. JCAHO has taken these goals a step farther by providing recommendations for

improvement and reduction in medical error.

Goal 1: Improve the accuracy of patient identification.

Goal 2: Improve the effectiveness of communication among caregivers.

Goal 3: Improve the safety of using medications.

Goal 4: Improve the safety of using infusion pumps.

Goal 5: Reduce the risk of healthcare-associated infections.

Goal 6· Accurately and completely reconcile medications across the continuum of care.

Goal 7: Reduce the risk of patient harm resulting from falls. (JCAHO, 2005)

Role of National Patient Safety Foundation

The National Patient Safety Foundation is a non-profit organization whose

primary aim is to increase patient safety. The National Patient Safety Foundation's

definition of healthcare error is, "An unintended healthcare outcome caused by a defect in

the delivery of care to a patient. Healthcare errors may be errors of commission (doing

the wrong thing), omission (not doing the right thing), or execution (doing the right thing

incorrectly). Errors may be made by any member of the healthcare team in any healthcare setting." (NPSF, 2005) Medical errors have an impact on patient satisfaction. Reducing medical errors is another approach to improving the public's perception of any healthcare facility.

Role of Leapfrog Group

The Leapfrog Group is yet another organization aimed at improving the quality of healthcare. The Leapfrog Group was established in 1998, when a group of large employers came together to address the issue of healthcare. They aimed to address and promote improvements in healthcare safety, quality and affordability. The group uses their purchasing power to "alert America's health industry that big leaps in health care safety, quality and customer value will be recognized and rewarded." (Leap Frog, 2004) This group has deployed a new tactic to tackle healthcare quality.

Leapfrog works in three main ways to encourage improvements in the quality of American health care.

1. **Building Transparency**

   Through fielding a voluntary survey –The Leapfrog Group Hospital Quality and Safety Survey – they ask if hospitals meet four quality and safety practices or 'leaps' Leapfrog then helps both consumers and employers make more informed decisions about their health care. The results of this survey are available on-line.

2. **Incentives and Rewards**

   Leapfrog helps employer members either directly or through their health plans to

provide incentives and rewards to hospitals that improve the quality of care they provide to patients by implementing Leapfrog's quality and safety practices.

3. **Creating Consistency and Leverage for Change**

Working with other organizations to develop and recommend other quality and safety initiatives for both hospitals and physician offices. (Leap Frog, 2004)

Pay-for-Performance

Pay-for-performance is a movement where increased reimbursement is awarded for improved quality of care. JCAHO has acknowledged the pay-for-performance trend and established key principles that payers should use to structure their own program. The Leapfrog Group has linked financial incentives to quality and has recommended that payments to providers be made on "comparative value". (O'Hare, 2005)

After completing a groundbreaking Medicare pay-for-performance demonstration project, Dr. Mark McClellan, M.D., Ph.D., administrator of the Centers for Medicare and Medicaid Services (CMS), remarked, "These early returns demonstrate that using financial incentives to reward better quality patient care works to deliver better care and avoid costly complications for our patients." The Premier Hospital Quality Incentive Demonstration tracked hospital performance on a set of 34 measures of processes and outcomes of care for five common clinical conditions. From these measures, CMS chose 17 to include in the national hospital quality reporting program. "The preliminary results of this demonstration suggest that limited performance-based payments not only provide real support to Medicare for improving care, but also lead to better health outcomes for our beneficiaries and lower Medicare costs as well," Dr. McClellan said. He continues,

"For example, there should be fewer unnecessary hospital readmissions if there is better care in the initial patient stay. But most of all, the patients are going to benefit through better care and better health."

Gallup Patient Satisfaction Surveys

The Gallup Organization has studied human nature and behavior for more than 70 years. Gallup employs many of the world's leading scientists in management, economics, psychology, and sociology. Gallup performance management systems help organizations increase customer engagement and maximize employee productivity through measurement tools, coursework, and strategic advisory services. Gallup's measurement professionals deliver services at client organizations, through the Web, at Gallup University campuses, and in 40 offices around the world. (Gallup, 2005)

The Gallup Organization works with clients representing the full spectrum of the healthcare industry   The consultants work with healthcare organizations to implement solutions that achieve crucial business outcomes and boost the bottom line. These include:

- strategic consulting
- leadership development
- customer engagement
- physician engagement
- patient loyalty

- employee engagement

- talent-based hiring

- sales force effectiveness (Gallup,2005)

Central Texas Medical Center uses the Gallup Organization to measure their patient satisfaction scores. Quarterly scores are distributed throughout the organization as a check for current progress. Key indicators are chosen each quarter and goals are set for improvement. The CTMC employee bonus program is even tied to the annual Gallup scores.

Patient Satisfaction

Patient satisfaction is often used as an indicator of healthcare quality. An article entitled "Patient Satisfaction With Triage Nursing in a Rural Hospital Emergency Department" (Elder, 2004) states that "Patients are more likely to return to a healthcare facility if they are satisfied with their previous experiences. In this era of healthcare competition, customer satisfaction and return to the facility have become areas of emphasis." In an article entitled "Patient Satisfaction in Military Medicine: Status and an Empirical Test of a Model" David Mangelsdorff, Ph.D. MPH (2003) examines patient satisfaction within the Military Health System. Mangelsdorff writes that, "Showing interest and concern for how patients feel about the care they received makes patients feel they are valued (as customers who have a choice)." Mangelsdorff discusses various definitions of attitudes before remarking, "Formally stated, overall patient satisfaction as an attitude may be defined as the expression of a patient's values that reflect a relatively enduring organization of specific beliefs about the care itself (object) that are focused on

the given situation of presentation or visit at a health care facility, predisposing patients to a response in some preferential manner." Mangelsdorff continues, "The proposed theoretical model for a patient's satisfaction attitude consist of three main components: the individual patient, the object of the care itself (and associated beliefs), and the situation in which the care occurs." Through regression analysis, Mangelsdorff found that the demographic variables (age, health status, gender), attitudes toward care, and waiting time were all related to patient attitudes toward the care itself being more relevant.

Paul Alexander Clark (2003) studied patient satisfaction from January to December 2001 Press Ganey Associates' Medical Practice Survey (n=503,407). The study showed that the question, "Our sensitivity to your needs" (r=0 85), most highly correlated with overall patient satisfaction. Clark continues "Patients' age, sex or first visit were not predictors of sensitivity to patients' needs. Responses highly correlated with sensitivity to patients' needs: (1) concern for patients' privacy, (2) cheerfulness of practice, (3) care received during visit, and (4) likelihood to recommend practice "

Patient Preferences

In an article entitled, "Patient Characteristics as predictors of primary health care preferences: a systematic literature analysis" Dr. Hans Peter Jung (2003) identifies associations between cultural and demographic factors and patients' preferences for primary health care. The study found that "Age and economic status significantly related to patient preferences in 38 and 33% of the comparisons, respectively. Education, health

status, family situation, sex, and utilization of healthcare related significantly to patient

preferences in less than 25% of the comparisons."

CHAPTER 3

METHODS

Data for this study were collected from a variety of sources. The study was performed by examining data retrospectively, as well as concurrently.

Patient Satisfaction

The Gallup organization is contracted by the Adventist Health System to provide quantitative data on patient satisfaction. The patient ranks their experience at CTMC on a four-point Likert scale where by: 4 = Very Satisfied, 3 = Satisfied, 2 = Somewhat Dissatisfied, 1 = Very Dissatisfied. Descriptive statistics are performed on the survey data by the Gallup organization and returned to CTMC in aggregate form quarterly.

Survey Instrument

A modified form of the H-CAHPS survey will be given at CTMC to all ED patients upon arrival by the ED Registration staff. The ED registration staff was chosen to hand out the survey because of the perceived distance between registration staff and clinicians. There is a box to return the completed survey when they leave or a postage paid envelope will be provided to return the survey.

The H-CAHPS survey is designed currently only for inpatients. Likely the instrument will soon be converted to measure the perception of Emergency Department patients. The survey instrument used is a possible adjustment of the current H-CAHPS survey into one designed specifically for Emergency Department patients.

The survey instrument was printed on one page, front and back, of legal size paper. The original H-CAHPS survey was printed on four standard size pages. The paper size was changed to make the survey appear shorter. It was hoped that if the survey appeared shorter in length, then the response rate of the survey will be higher. A postage paid envelope was attached to each survey for easy return.

The first change made to the survey instrument was in the instructions The current H-CAHPS instructions read, "You should only fill out this survey if you were the patient during the hospital stay named in the cover letter. Do not fill out this survey if you were not the patient." The ED survey instructions were modified by leaving out this line. Emergency Department patients are usually seeking urgent treatment. They are usually escorted by friends or family members. These family members are not seeking urgent care and are often better observers of the Emergency Department; therefore, they're input may be more valuable. In order to remedy this situation, a question was added to the "About You" section of the survey asking "Who is completing this survey?" The choices read: Patient, Parent or Guardian of Patient, Spouse/Significant Other, Other.

The second change made to the survey was the addition of patient identifiers. The patient's first name, last name, and date will be used to capture additional information from various sources such as AS400 and the medical record. Patient information will be vital to data analysis in the creation of independent variables to be used in prediction models.

Data Analysis

Data will be entered into SPSS for analysis. Linear regression will be used to determine the relationship between Gallup scores and HCAHPS scores for patient

satisfaction. The unit of measurement will be the quarter, using aggregate scores for equivalent time periods. Regression analysis will be used to determine the relationship between Gallup and HCAHPS scores and patient demographic data. The goal of this analysis will be to create a predictive model for patient satisfaction. Knowing the differences between patients and how those differences may influence satisfaction scores will enable staff training programs to be developed within the hospital to increase awareness and sensitivity of hospital staff to the issue of patient satisfaction.

CHAPTER 4

RESULTS

The sample (n=45) was collected at the Central Texas Medical Center Emergency

Department in San Marcos, Texas from October 10-November 10, 2005

Descriptive Analysis of Respondent Demographics

Respondent

Respondents (n=43) were asked to indicate who was completing the survey. 27

of the respondents were the patient. Seven of the respondents were a parent or guardian

of the patient. Three of the respondents were a spouse or significant other of the patient.

Six of the respondents responded with other.

Ethnic Group

Respondents (n=43) were asked their race from a choice of: White, Black or

African American, Asian, Hispanic or Latino, American Indian or Alaska Native, and

Native Hawaiian or Pacific Islander. 22 of the respondents were White. Four of the

respondents were Black or African American. One of the respondents was Asian. 16 of

the respondents were Hispanic or Latino. Zero of the respondents were American Indian

or Alaska Native. Zero of the respondents were Native Hawaiian or Pacific Islander

Primary Language

Respondents (n=42) were asked what language is mainly spoken at home: English, Spanish or other. 39 of the respondents mainly speak the English language at home. Eight of the respondents mainly speak the Spanish language at home.

General Health

Respondents (n=42) were asked to rate their overall health on a scale were the highest is excellent and lowest is poor. Eight of the respondents rated their overall health as 'excellent' or '5'. Eight of the respondents rated their overall health as 'very good' or '4'. 16 of the respondents rated their overall health as 'good' or '3'. Six of the respondents rated their overall health as 'fair' or '2'. Four of the respondents rated their overall health as 'poor' or '1'. The mode overall health score of the sample is 'good' or '3'.

Descriptive Analysis of Survey Categories

The majority of the survey provided four possible answer choices for each question. The choices ranged from: 'never' or '1', 'sometimes' or '2', 'usually' or '3', 'always' or '4'

Nursing

The nursing section of the survey instrument consists of questions 1-4 of the survey instrument. Question 1 (n=45) asked how often nurses treated you with courtesy and respect. Question 2 (n=45) asked how often nurses listen carefully to you Question 3 (n=44) asked how often nurses explained things in a way you could understand. Question 4 (n=45) asked how often you got help as soon as you wanted it To calculate

the total score for the nursing section, the responses coded with numbers were summed together. The mean score for the nursing total was 14 95 out of a possible 16. The mode for nursing total was 16. The mean nursing response of all the questions in the section were 3.8, 3.8, 3.8 and 3.4, respectfully. The mode nursing response to all of the questions in the section was 'always' or '4'.

Doctors

The doctor section of the survey instrument consists of questions 5-7 Question 5 (n=42) asked how often doctors treated you with courtesy and respect. Question 6 (n=42) asked how often doctors listened carefully to you. Question 7 (n=43) asked how often doctors explained things in a way you could understand. To calculate the total score for the doctor section, the responses coded with numbers were summed together. The mean score for the doctor total was 11.26 out of a possible 12. The mode for doctor total was 12. The mean doctor responses of all the questions in the section were 3.8, 3 7, and 3.7, respectfully. The mode doctor response to all of the questions in the section was 'always' or '4'.

Clinician Score

The clinician score was derived by adding the nursing and doctor section totals together. These responses are from survey questions 1-7. The mean clinician score (n=41) was 26.17 out of a possible 28. 47.1% of the respondents gave the clinicians a perfect score of 28.

Hospital Environment

The hospital environment section consists of two questions 8 and 9. Question 8 (n=44) asked how clean the exam room was kept. Question 9 (n=42) asked how quiet the area around the exam was kept. To calculate the total score for the hospital environment section, the responses coded with numbers were summed together. The mean score for the hospital environment total was 7.05 out of a possible 8. The mode score for the hospital environment total was 8. The most frequently occurring hospital environment response was 'always' or '4'.

Emergency Department Experience

The emergency department experience section consisted of questions 10, 11, 13, and 14. Question 10 (n=42) asked how your pain was controlled. Question 11 (n=41) asked how often the hospital staff did everything they could to help you with your pain. Question 13 (n=32) asked if the hospital staff tell you what the medicine was for, before giving you any new medicine. Question 14 (n=35) asked if the hospital staff described any possible side effect in a way you could understand. Question 12 (not included in this scale since it was nominal data) asked were you given any medicine you have not taken before. The answer choices for question 12 are 'yes' and 'no'. This question acts as a filter, but is not included in any the point totals. To calculate the total score for the emergency department experience section, the responses coded with numbers were summed together. Only cases with complete data were summed. The mean score (n=30) for the emergency department experience section was 13.8 out of a possible 16. The mode for the total emergency department experience section was 16. The mean of the responses was 3.4, 3 5, 3.5, and 3.0, respectfully

Rating of Emergency Department

The respondents were asked to rate the Central Texas Medical Center Emergency Department. The scale for ranking began at 0 meaning the worst emergency department to 10 meaning the best emergency department. The mean overall hospital satisfaction score (n=42) was 8.21. The most frequently occurring overall score was 10.0. The median score was 9.0. Standard Deviation is 2.33. The distribution is negatively skewed.

Overall Score

The overall score for the survey instrument was calculated by adding the coded responses from questions 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, and 14. The mean overall score (n=25) was 46.52 out of a possible 52. The median score is 50.0. The mode is also 50.0. Standard deviation is 6.75. The distribution is negatively skewed.

Regression Analysis

Through the use of linear regression, a model was created to predict the overall satisfaction of the Emergency Department question on the survey. The question 16 reads "Using any number from 0 to 10, where 0 is the worst Emergency Department possible and 10 is the best Emergency Department possible, what number would you use to rate this hospital?" One factor emerged as the best predictor of overall satisfaction. The answer to question 7: "During this Emergency Department visit, how often did doctors explain things in a way you could understand?" predicts overall satisfaction better than any other question in the survey. The next best predictor of overall satisfaction is question 5 "During this Emergency Department visit, how often did doctors treat you with courtesy and respect?"

Model 1.

Q16:OverallSatisfaction=2.076(Q7:DoctorExplain)+1.454(Q5:DoctorCourtesy)-5.106

Table 1 Regression.

Source	df	Sum of Squares	Mean Square	F
Regression	2	135.138	67.569	29.776*
Residual	37	83.962	2.269	
Total	39	219.1		

*significant at <0.05 level

Factor Analysis

Factor Analysis was used to examine the survey instrument. Principal Component

Analysis was used with a Varimax rotation to determine two distinct components within

the instrument: Compassion and Information Dispersal. The information dispersal

component consisted of the questions: nurse help, doctor explain, hospital quiet, med

side effects, and discharge instructions. The compassion component consisted of: nurse

courtesy, nurse listen, nurse explain, doctor courtesy and doctor listen.

Table 2 Factor Loadings.

	Component	
	1	2
Nurse Courtesy	- 096	938
Nurse Listen	064	.847
Nurse Explain	344	580
Nurse help	749	543
Doctor Courtesy	437	671
Doctor Listen	377	841
Doctor Explain	737	510
Hospital Clean	362	332
Hospital.quiet	618	- 258
ED Pain controlled	.198	176
ED Staff help with pain	497	346
ED New Med	019	155
ED Med for?	559	450
ED Med side effects	869	137
ED discharge instructions	954	043

By using regression analysis to analyze the two components, a significant prediction model was created.

Model 2.

Q16:Overall Satisfaction=1.541(Information Dispersal)+1.241(Compassion)+7 333

Table 3 Regression.

Source	df	Sum of Squares	Mean Square	F
Regression	2	78.289	39.144	7.973*
Residual	18	88.378	4 91	
Total	39	166.667		

*significant at <0.05 level

CHAPTER 5

CONCLUSIONS

Healthcare has an ever increasing need to become like other industries where the quality of products and services is something that can always be improved. The success of the healthcare industry requires a hodgepodge of applications from a vast array of industries. Many of these industrial arenas may initially seem foreign to medicine, but in order to grow, healthcare is forced to think outside the box. Healthcare is manufacturing, marketing, hospitality and much more all rolled into one. In healthcare there is the need to reduce the number of defects similar to a manufacturing industry. In an attempt to remedy this problem, healthcare has borrowed Motorola's industrial engineering methodology of Six Sigma. With the introduction of Six Sigma, healthcare is also beginning to adopt the popular Japanese concepts of 'kiazen' and systems thinking. Due to the competitive nature of the healthcare industry, there is a need to predict future markets through the use of geographic information systems. Programs like ArcGIS help administrators predict future growth and markets. Customer service programs in healthcare have been borrowed from hotels like the Ritz-Carlton and theme parks like Disney World. As the healthcare industry becomes more willing to adapt and change with the advances of future medicine, knowledge learned from outside industries will be a key factor to determine success.

The field of biostatistics provides a vast toolbox of skills to analyze problems in the healthcare industry. The statistical tests range from a simple chi-squared test to complex multivariate analysis. By harnessing the power of biostatics, hospitals can provide data to support decisions, analyze trends, and predict the future through the use of models. Biostatistics is currently underutilized by the healthcare industry.

The idea of improving Emergency Department patient satisfaction upon preliminary analysis may seem unattainable. The concept of patient satisfaction seems too broad and the factors that influence it seem too complex. Biostatistical analysis can help to narrow the focus on the most influential factors, thereby making the goal for increasing patient satisfaction more easily attainable.

This case study used biostatistics to examine patient satisfaction in the Emergency Department at Central Texas Medical Center in San Marcos, Texas. The regression equations gained from this research can be used to help predict patient satisfaction. The regression analysis extrapolated the key areas vital to patient satisfaction in the Emergency Department. With this knowledge the Emergency Department will be able to focus on the key factors, for example compassion and doctor courtesy, that determine the majority of patient satisfaction. Narrowing the focus increases the likelihood of a successful effort by decreasing wasteful efforts that may only provide a minimal improvement in patient satisfaction. Resources such as time, money, manpower and supplies can be reduced by taking the time initially to analyze the problem. The investment in biostatistics by the healthcare industry has numerous possibilities for potential cost savings and improvements.

The results of this case study will be used to develop an action plan to improve patient satisfaction in the Central Texas Medical Center Emergency Department. The independent or prediction variables from the regression models serve as a basis for training programs in patient satisfaction. Once the Emergency Department clinicians know what influences patient satisfaction, they will be more likely to change how they interact with patients, thus leading to a customer who is more likely to select that hospital in the future. This study reflects the changing environment of the healthcare industry. As the demand for publicly reported data increase, the healthcare industry is persuaded to turn to biostatistics for process improvement.

This study reaffirmed the work by Paul Alexander Clark (2003) who studied patient satisfaction from January to December 2001 Press Ganey Associates' Medical Practice Survey (n=503,407). The study showed that the question, "Our sensitivity to your needs" (r=0.85), most highly correlated with overall patient satisfaction. This question is very similar to the questions in this research study that became significant in both models The statement "Our sensitivity to your needs" encompass the study's concepts of compassion, courtesy, and respect. David Mangelsdorff, Ph.D. MPH (2003) examined patient satisfaction within the Military Health System and found that clinician attitudes toward care were related to patient satisfaction with the care. Clinician attitude toward care is compassion. This was verified by this study of emergency department patient satisfaction.

APPENDIX

Central Texas Medical Center
Emergency Department Patient Satisfaction Survey

- Answer all the questions by checking the box to the left of the questions.

- All information that would allow someone identify you will be kept private.

- Information collected will be used by Central Texas Medical Center to help improve the Emergency Department Services.

- Please answer the questions in this survey based on your experience in this Emergency Department. Do not include any other Emergency Department visits in your answer.

Your Care From Nurses

1. During this Emergency Department visit, how often did nurses treat you with <u>courtesy and respect</u>?

☐-Never
☐-Sometimes
☐-Usually
☐-Always

2. During this Emergency Department visit, how often did nurses <u>listen carefully to you</u>?

☐-Never
☐-Sometimes
☐-Usually
☐-Always

3. During this Emergency Department visit, how often did nurses <u>explain things</u> in a way you could understand?

☐-Never
☐-Sometimes
☐-Usually
☐-Always

4. During this Emergency Department visit, how often did you get help as soon as you wanted it?

☐-Never
☐-Sometimes
☐-Usually
☐-Always

Your Care From Doctors

5. During this Emergency Department visit, how often did doctors treat you with <u>courtesy and respect</u>?

☐-Never
☐-Sometimes
☐-Usually
☐-Always

6. During this Emergency Department visit, how often did doctors <u>listen carefully to you</u>?

☐-Never
☐-Sometimes
☐-Usually
☐-Always

7. During this Emergency Department visit, how often did doctors <u>explain things</u> in a way you could understand?

☐-Never
☐-Sometimes
☐-Usually
☐-Always

The Hospital Environment

8. During this Emergency Department visit, was your exam room kept clean?

☐-Never
☐-Sometimes
☐-Usually
☐-Always

9. During this Emergency Department visit, was the area around your exam room quiet?

☐-Never
☐-Sometimes
☐-Usually
☐-Always

Your Experience In This Emergency Department

10. During this Emergency Department visit, was your pain controlled?

☐-Never
☐-Sometimes
☐-Usually
☐-Always

11. During this Emergency Department visit, how often did the hospital staff do everything they could to help you with your pain?

☐-Never
☐-Sometimes
☐-Usually
☐-Always

12. During this Emergency Department visit, were you given any medicine that you have not taken before?

☐-Yes
☐-No

13. Before giving you any new medicine, how often did the hospital staff tell you what the medicine was for?

☐-Never
☐-Sometimes
☐-Usually
☐-Always

14. Before giving you any new medicine, how often did hospital staff describe possible side effects in a way you could understand?

☐-Never
☐-Sometimes
☐-Usually
☐-Always

15. During this Emergency Department visit, did you get information in writing about what symptoms or health problems to look out for after you left the hospital?

☐-No
☐-Yes

Overall Rating of This Emergency Department

16. Using any number from 0 to 10, where 0 is the worst Emergency Department possible and 10 is the best Emergency Department possible, what number would you use to rate this hospital?

☐-0 Worst Emergency Department
☐-1
☐-2
☐-3
☐-4
☐-5
☐-6
☐-7
☐-8
☐-9
☐-10 Best Emergency Department

17. Would you recommend this hospital to your friends and family?

☐-Definitely No
☐-Probably No
☐-Probably Yes
☐-Definitely Yes

About You

18. In general, how would you rate your overall health?

☐-Excellent
☐-Very Good
☐-Good
☐-Fair
☐-Poor

19. What is your race? Please choose one or more.

☐-White
☐-Black or African American
☐-Asian
☐-Hispanic or Latino
☐-American Indian or Alaska Native
☐-Native Hawaiian or Pacific Islander

20. What language do you <u>mainly</u> speak at home?

☐-English
☐-Spanish
☐-Some other language
(please print): _____

21. Who is completing this survey?

☐-Patient
☐-Parent or Guardian of Patient
☐-Spouse/Significant Other
☐-Other
(please print): _____

<u>**Name of Patient:**</u>

First Name_____

Last Name_____

Date of visit _____

Time of visit_____

This information will be kept confidential.

Please return this survey to the drop box in the Emergency Department or use the postage paid envelope and place this in the mailbox.

<u>Thank you for completing this survey!</u>

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VITA

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