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## The Relationship between Emergency Department Wait times and Inpatient Satisfaction

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THE RELATIONSHIP BETWEEN EMERGENCY DEPARTMENT WAIT  
TIMES AND INPATIENT SATISFACTION

by

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A DISSERTATION

Submitted to the graduate faculty of the University of Alabama at Birmingham,  
in partial fulfillment of the requirements for the degree of  
Doctor of Science in Health Services  
Administration

BIRMINGHAM, ALABAMA

2014

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# THE RELATIONSHIP BETWEEN EMERGENCY DEPARTMENT WAIT TIMES AND INPATIENT SATISFACTION

POLLY DAVENPORT

D.Sc IN ADMINISTRATION -HEALTH SERVICES

## ABSTRACT

This study examined patient perceptions of emergency department wait times and inpatient experiences. In many organizations across the country, the emergency department is now the “front door” to the hospital; therefore, understanding the impact of the ED experience on the inpatient experience is a critical aspect for leaders managing these complex settings in our hospitals today.

The Expectancy–Disconfirmation theory was utilized as a framework to examine six hypotheses regarding patient experiences in the emergency department as well as the inpatient unit in relation to the following: (1) patient actual emergency department wait times, (2) patient perceived ratings of ED wait times, (3) whether a positive emergency department experience influenced the inpatient experience, and (4) patient lengths of stay when admitted as inpatients. Data were utilized from actual patient responses from mailed inpatient surveys based on “very good” responses regarding patient inpatient experiences, emergency department experiences, and patient perceptions of emergency department wait times. Actual ED wait times were calculated from electronic medical records. Patient total lengths of stay were calculated from the time patients entered the ED until discharged from the inpatient unit.

Results showed statistically significant relationships between a very good ED experience and a very good inpatient experience. Perceived wait times in the ED, more so than actual ED wait times served as a predictor of a very good ED rating as well as a very good rating of the inpatient experience. As theorized, length of hospitalization was not a statistically significant predictor of influence on a very good rating of the inpatient experience for patients having a length of stay of less than four days. Length of stay had no influence on a very good rating in this sample.

As health care reimbursement continues to be tied to patient satisfaction, this quantitative study can serve as basis for leaders to improve processes in the ED to address patient perceptions of wait times as well as processes that influence actual emergency department wait times.

Key terms: patient satisfaction, patient experience, Emergency department wait times,

## ACKNOWLEDGEMENTS

To my classmates in the “third” cohort of the Executive Doctoral program in Health Care Administration at UAB, I want to thank you for conversations that were both stimulating and thoughtful. They made learning not only fun but one of the highlights of my professional career. The entire team within the Health Care Administration program, led by Dr. Robert Hernandez and Leandra Celaya, designed an optimal learning experience so that I was able to move from an “operations” to a “theoretical” perspective, one that is often overlooked by many executives as we advance up the career ladder.

I deeply appreciate the guidance and support of my committee chair, Dr. Stephen O’Connor, as well as the patience and clarity provided by Dr. Jeff Szychowski, Dr. Amy Landry, and Dr. Robert Hernandez. They all brought forward an important perspective about health care not only during my dissertation process but throughout our time in class together.

Extremely important to the success of this work was Nauraj Pannu from Ochsner’s IT/Analytics department who assisted me with my data collection process. His knowledge of our new EMR and our satisfaction survey system was a key contributing factor to this work. To my colleagues at Ochsner who carried through our organizational mission for the North Shore during my intermittent absence, I am thankful to work with such a tremendous team including Alan Hodges, Nicole Gonzales, Cheryl Woods, Forrest Whichard, Dr. James Newcomb, and Dr. Ed Martin.

Most meaningful was the time spent interacting with my daughter Holly and son Clay. All three of us were advancing our education simultaneously which created a new family dynamic where my greatest encouragement and support at times came from my children. In the midst of this journey, our family celebrated two weddings and the birth of my two grandsons, Hudson and Jackson. I am appreciative that all of these life changing experiences occurred around my school schedule!

I wish to thank Bruce, my husband of 36 years, for his patience and support and for taking this slight detour with me over the past three years. And finally to my mother Bobbe, the most determined person I have ever known who instilled in me a strong work ethic and who understood that there is no goal that cannot be achieved without passion and determination. May I live to be 89 years old and be so strong and full of such life and optimism as my dear mother.

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## ABBREVIATIONS

CMS	Center for Medicare and Medicaid Services
ED	Emergency Department
HCAHPS	Hospital Consumer Assessment of Healthcare Providers and Systems
LOS	Length of stay
OR	Odds Ratio
VBP	Value Based Purchasing

## **CHAPTER 1**

### **INTRODUCTION**

Health care organizations are currently being rewarded or penalized for patients' evaluations of the care delivered to them in the inpatient setting, even during short lengths of stays. It is incumbent upon health care leaders to learn an effective theoretical approach to addressing patient perceptions of care and how to improve in this rapidly changing health care environment.

Value Based Purchasing (VBP) is a contemporary reimbursement model developed under the Patient Protection and Affordable Care Act of 2010, which includes a provision that will result in public reporting of hospital data becoming a true pay for performance model. VBP places a percentage of virtually every hospital's Medicare reimbursement at risk beginning with 1% in fiscal year 2013 and growing to 2% in fiscal year 2017 (Boustani et al., 2012). CEOs are expected to achieve outcomes related to VBP expectations, and subsequent financial penalties may be assigned to organizations that fail to meet the minimal outcome requirements.

On average, U.S. hospitals are projected to have \$500,000 to \$850,000 at risk annually under this VBP reimbursement model. The intent of this new reimbursement model is to reward or penalize health care organizations, in particular hospitals, for achieving targeted metrics based on patients' perceptions of care delivered in the hospital as well as quality process of care measures. Hospitals will have to earn back the withheld payments through performance on a range of clinical care and Hospital Consumer Assessment of Healthcare Providers Systems (HCAHPS) survey measures (Boustani et

al., 2012).

The initial research and testing of the HCAHPS survey instrument began in 2002. The widely publicized purpose was to create a uniform measurement and to develop a public reporting of patients' perspectives on their inpatient care. The goals for HCAHPS were clearly outlined to create incentives for hospitals to improve quality of care, enhance public accountability, and increase transparency of the quality of hospital care in the U.S. (Elliott et al., 2009; Giordano, Elliott, Goldstein, Lehrman, & Spencer, 2010).

HCAHPS metrics are presently gathered through a survey instrument conducted by the Center for Medicare and Medicaid Services (CMS) which is administered to approximately 300 patients per month, depending on hospital size. The survey is administered to adults 18 years or older with at least one overnight stay in the hospital. Individuals who receive the survey must be inpatients with a non psychiatric diagnosis on discharge and alive at the time of discharge. The first public reporting of HCAHPS results occurred in March 2008 with subsequent quarterly updates transparently provided via the *Hospital Compare* Website (Giordano et al., 2010).

Health care organizations pay nationally-recognized patient satisfaction survey vendors to administer the HCAHPS survey. In fact, even prior to the VBP model, a large industry had emerged to offer assessment and prescriptive services to measure and improve patient satisfaction (O'Connor & Shewchuk, 2003). These services became the precursor to the development of the HCAHPS assessment tool which was intended to create a standardized approach to rating patient perceptions of their inpatient care (Giordano et al., 2010). Prior to HCAHPS, improving patient satisfaction may have been a necessary tactic to differentiate and create a competitive advantage among hospitals.

However, patient perceptions of their care under the HCAHPS model are more than a competitive differentiator. Patient perceptions of care are now a financial component that every hospital CEO cannot afford to ignore. For many CEOs, the success or failure of their organizations may be measured in part by the results of their HCAHPS scores.

Patient satisfaction vendors administer the required survey instrument for the publicly reported HCAHPS information while also offering patient satisfaction survey instruments for other patient populations within the organization. Once completed, these surveys are reported out by location of service provided. Surveys are further divided by areas of care, such as inpatient care, outpatient care, emergency department care, ambulatory surgical care, and medical practice care. This separation of information is necessary for reporting purposes; however, leaders may be inclined to create interventions to improve patient perceptions of care in a divided fashion rather than creating interventions to enhance the entire continuum of care regardless of where it was delivered.

Prior to the implementation of HCAHPS, inpatient instruments were largely *satisfaction-based* surveys utilizing a four point scale and evaluating the organization based on a mean score. Unlike these inpatient satisfaction surveys, HCAHPS utilizes a “frequency-based” 4-point scale with the following response options: always, usually, sometimes, and never. Additionally, HCAHPS evaluates top box performance and evaluates inpatient perceptions of care regardless of the entry point of the patient (Giordano et al., 2010). A top box raw score is the percentage of patients who choose the most positive or “top box” response to the HCAHPS survey items (HCAHPS, 2013).

According to the American Hospital Association and the National Center for Health Statistics, the number of annual emergency department visits in the U.S. rose from 90 million to 123 million between 1990 and 2008, which accounted for approximately 41 visits per 100 people (Boustani et al., 2012). The total number of hospital admissions grew from 34.3 million in 1993 to 39.5 million in 2006—an increase of 15%. During this same period of time, the number of hospital admissions from emergency departments (EDs) grew from 11.5 million to 17.3 million—an increase of 50.4%. The number of hospital admissions, or inpatient stays, through EDs increased from 33.5% to 43.8%. Based on these figures, the role of emergency departments in hospital admissions has grown considerably since 1993 (Estrera, 2012). Even though VBP reimbursement is based on HCAHPS inpatient perceptions of care, it may be noteworthy that perceptions of inpatient stays may be impacted by a patient's time spent in the emergency department, especially considering the recent increase in inpatient arrivals through the emergency department.

For this study, the literature review examined customer satisfaction vs. patient satisfaction and how they differ, as well as the empirical models for evaluating patient perceptions of the services they received, despite the lack of empirical studies of this topic. In commentary entitled: *Patient Satisfaction, What is the Point?*, O'Connor and Shewchuk (2003) acknowledged that satisfaction literature yielded hundreds of small scale studies, but for the most part the studies employ simple descriptive and correlational analysis. The authors regarded the work to-date to be idiosyncratic and domain specific and raised concerns as to whether health care managers were simply making inferences to design their strategic decisions (O'Connor & Shewchuk, 2003). Sitzia and Wood (1997)



suggested that the greatest weakness with regard to the study of patient satisfaction is that theoretical work has concentrated on the development of models which explain the *results* of satisfaction studies rather than questioning the theoretical foundation by which satisfaction and its measurement are based. This evaluation of the research literature further validates the need for a more theoretical and broader conceptual approach to addressing patient satisfaction.

The role of research in improving patient satisfaction reaches far beyond the current ties to reimbursement that hospitals are now facing under the current VBP model. Achieving satisfaction is not simply a competitive advantage; the link between patient satisfaction and higher quality has been extensively studied and demonstrated that improved patient satisfaction can result in higher satisfaction of employees, lower employee turnover, better risk management, and improved financial health (Press, 2002). All of these factors are important components of any high performing organization.

### **Significance of the Study**

There is a plethora of research on improving emergency department satisfaction results (Andrulis, Kellermann, Hintz, Hackman, & Weslowski, 1991; Baker, 2010; Boudreaux & O'Hea, 2004; Bursch, Beezy, & Shaw, 1993; Derlet & Richards, 2000; Estrera 2012; Huang, Thind, Dreyer, & Zaric, 2010; Pines et al., 2008; Schuur & Venkatesh, 2012; Taylor & Bengner, 2004; Thompson & Yarnold, 1995; Thompson, Yarnold, Williams, & Adams, 1996). The American College of Emergency Physicians provides a variety of studies and subsequent interventions aimed at improving Emergency Department satisfaction. A great deal of this research entails improving patient perceptions of care based on emergency department (ED) wait times. In fact,

many ED leaders are evaluated on their *door to doc* time (time patient arrives to the ED until seen by a physician in the ED) as well as the *left without being seen* metrics (patients who sign in but leave the ED before being seen). These data are easily captured in most emergency departments and considered important measures of the internal effectiveness of emergency department operations.

As a result of new Joint Commission standards, hospital administrators are also focused on creating plans to prevent *boarding* of admitted patients in the emergency department while waiting for an inpatient bed (Calloway, 2012). In preparation for this standard, a great deal of focus has been aimed at improving ED flow, but these efforts have limited empirical support regarding how efforts may impact an inpatient's satisfaction when arriving from the emergency department.

There are also a variety of nationally recognized consultants, such as The Studer Group, Baptist Leadership Institute, Press Ganey, National Research Corporation, and others that offer recommendations based on improving care of inpatients and outpatients for hospitals that engage their services. Each consultant group has a significant database of its member organizations from which to gather information and draw conclusions for its clients. As hospital lengths of stay become shorter, it is unlikely that patients would be able to distinguish their care post discharge as ED care and inpatient care. Rather, patients typically consider their entire hospitalization as one experience when evaluating the service received by the hospital.

Previous researchers have studied improving inpatient or overall patient satisfaction results, but research is limited regarding the potential correlation between perceptions of the emergency department experience and how perceptions may influence

admitted patients' overall perceptions of inpatient care when their care originated in the emergency department.

There are many components of an effective patient experience that need to be considered. The purpose of this study was to examine the concept of expectancy-disconfirmation theory and to evaluate whether a patient's actual or perceived wait time in the emergency department significantly influenced inpatient satisfaction for individuals whose point of entry was the emergency department. Given the shorter lengths of inpatient stays prevalent in hospitals today, this study also determined whether these patients viewed their emergency department wait times as significantly different than those whose stays were longer. If validated, interventions should be considered that are specific to patients who are interacting with the health care team under much shorter timeframes. As a result of this research, hospital executives may recognize the value in treating these two areas of the organization, the inpatient and emergency departments, not as separate entities, but as one in which collaborative interventions can be implemented to improve patient perceptions of care along the continuum of the entire health care experience.

### **Research Question**

There is a great deal of support in the emergency department literature that confirms the following: patients with shorter perceived wait times have improved overall perceptions of their emergency department care (Thompson et al., 1996). If lengths of stay in the hospital are now even shorter than in the past, it is likely that patients may consider their emergency department experience as part of their overall inpatient stay.

This distinction may be lost when individuals are subjectively completing the HCAHPS survey. Therefore, this study addressed the following research question:

- Can patients' perceived or actual wait times in the emergency department influence satisfaction of their inpatient stay?

Hospitals that have a problem with boarding admitted patients in the emergency department have a separate set of interventions to improve patient flow than do hospitals that have inpatient capacity. The hospital for this study did not routinely have extensive emergency department wait times due to lack of inpatient capacity. Therefore, the variable of "boarding patients" was not a factor in this analysis. This study addressed actual vs. perceived wait times in the emergency department on inpatient satisfaction and determined via this sample population whether actual or perceived wait times influenced emergency department satisfaction, as the current empirical literature suggests.

### **Plan of Work**

Chapter two provides a review of the literature with regard to customer satisfaction vs. patient satisfaction and the theoretical basis for expectancy-disconfirmation theory as it pertains to patient expectations and resultant satisfaction. Further, an in-depth review regarding the perspective behind measurement of perceived wait times vs. actual wait times is provided. Chapter three presents the hypotheses derived from the literature review and provides further explanation regarding the research methods proposed and data set available to test these hypotheses.

## **CHAPTER 2**

### **LITERATURE REVIEW**

In the emergency department literature, there are numerous studies focused on patient satisfaction as well as separate studies aimed at improving care in the outpatient and inpatient settings. Few studies have looked for a corollary between emergency department satisfaction and inpatient satisfaction. Since Value Based Purchasing (VBP) is based on patient perceptions of care and will subsequently tie reimbursement to these evaluations, it is incumbent upon health care leaders to further study the potential impact of the emergency department on inpatient satisfaction, especially now since the emergency department is considered to be the “front door” to the hospital. The objective of this chapter is to provide a thorough review of the research literature regarding the impact of patient perceptions of emergency department care and how it may affect patient ratings of their inpatient experiences. The Expectancy-Disconfirmation theory served as the theoretical framework for this research.

#### **Customer vs. Patient Satisfaction**

Customer satisfaction can be seen as a precursor to understanding how to define patient satisfaction. Locke (1967) asserted that customer satisfaction/dissatisfaction is an emotional response triggered by a cognitive-evaluative process in which the perceptions of an action or condition are compared to one’s values, needs, wants, and desires (Westbrook & Reilly, 1983). Based on Locke’s theory, services may provide more of an attribute or outcome than what is desired, but have little impact on satisfaction unless this aspect causes a blockage in the attainment of another value (Westbrook & Reilly, 1983).

Theories about customer wait times outside of the health care industry can be used to create a conceptual framework for patient satisfaction in the hospital setting. The field of marketing provides theories for improving customer satisfaction and places emphasis on the expectation theory with regard to improving customers' perceptions of service. In *The Psychology of Waiting Lines*, Maister (1984) described the expectancy-disconfirmation theory by noting that satisfaction is a reflection of perception less the consumers expectation or  $S=P-E$  (where S is satisfaction, P is perception, and E is expectation).

Simply stated, if an individual expects a certain level of service but perceives the service received to be higher the client is satisfied. Conversely, if a client perceives that the level of service received is less than expected, he or she can become dissatisfied. From a marketing perspective, Maister described the following basic principles of waiting in line, which can be easily translated to the health care arena: (a) occupied time feels shorter than unoccupied time, (b) people want to get started, (c) anxiety makes waits seem longer, (d) uncertain waits are longer than known or finite waits, (e) unexplained waits are longer than explained waits, (f) unfair waits are longer than equitable waits, (g) the more valuable the service the longer the customer will wait, and (h) solo waits feel longer than group waits (Maister, 1984).

Many of the principles outlined by Maister (1984) can be seen as a corollary to activities occurring within a hospital or health care setting. Access to health care could certainly be considered a "valuable" service for which consumers would wait longer for the service than something of less personal significance. Second, providers are also trained to offer information to patients regarding wait times for procedures, surgical start

times, and medication administration in an effort to meet expectations and decrease anxiety. Finally, families are encouraged to wait with their loved ones. In patient-centered care, health care team members recognize that having family members present helps to address the concept that “solo” wait times feel longer than group waits.

Significant research addressing the issue of patient satisfaction within health care was conducted during the early 1970s and 1980s. In the 1970s, a number of authors used theoretical constructs and empirical data from a variety of disciplines to develop a conceptual understanding of consumer satisfaction. Bodies of literature included marketing theory, psychology, social science research, and business management. The consolidation of theoretical and empirical research led to the expectancy-disconfirmation paradigm, which became the dominant model used to explain satisfaction (Mormer, 2012).

In the early 1980s, Linder-Pelz (1982) described the interest in patient satisfaction as an outgrowth of the consumer movement and the recognition that satisfied patients are more compliant patients and therefore have better health care outcomes. According to Mormer (2012), patient satisfaction was seen as one of the goals of health care delivery, and methods to improve patient satisfaction have become more relevant. Linder-Pelz (1982) defined patient satisfaction based on the social-psychological theory that the expression of satisfaction is an expression of an attitude or an affective response. Therefore, patient satisfaction is related to beliefs that care possesses certain attributes or dimensions as well as the patients’ evaluation of these attributes. Patient satisfaction was defined by Linder-Pelz as the “individual’s positive evaluations of distinct dimensions of health care” (Linder-Pelz, 1982 as cited in Sitzia & Wood, 1997, p. 1833). Fitzpatrick

argued that while satisfaction is multi-component, it cannot be viewed as a single concept. Rather, satisfaction is comprised of several determinants. As cited by Sitzia and Wood (1997), Fitzpatrick contended that socially created expectations are the primary determinant of the degree of satisfaction, such as efforts to address cultural differences that may directly influence satisfaction. Second, seeking help to bring resolution to health problems is a greater concern to patients than simply being satisfied. Finally, satisfaction is more of a reflection of perceptions of interest or affective behavior by the doctor than the doctor's technical competency.

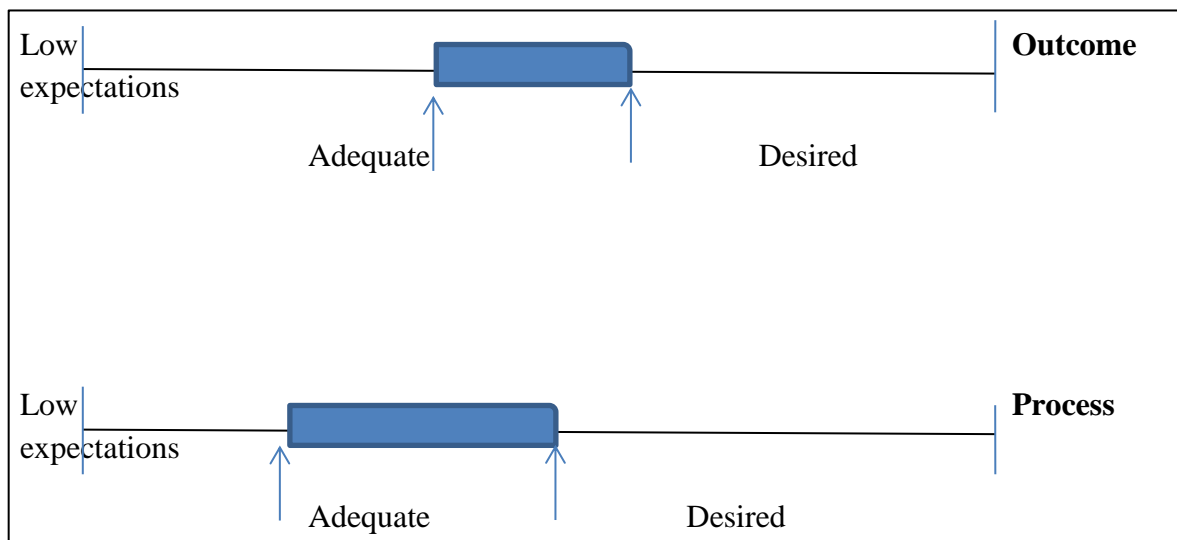
In 1997, Sitzia and Wood identified the lack of attention to the meaning of the construct of patient satisfaction as the single greatest flaw in patient satisfaction research. Beyond the consumer behavior and marketing literature, the study of patient satisfaction has moved toward a direct relationship between satisfaction and the fulfillment of expectations, which is the dominant theory in health care today (Hudak, Hogg-Johnson, Bombardier, McKeever, & Wright, 2004). In earlier work, Mohr (1982) developed a framework for the majority of satisfaction studies based on the following four constructs: expectations, performance, disconfirmation, and satisfaction (Caruana, 2002).

Parasuraman et al. (1985a, 1988b, 1994c) operationalized the service quality construct through the development of a 22 item SERVQUAL instrument designed to assess customer perceptions of service quality in the service and retail industries (Caruana, 2002). SERVQUAL is currently one of the most widely utilized measurements of the expectations-performance gaps in customer service. The measurement model in the SERVQUAL instrument is conceptually similar to the disconfirmation paradigm. When applied to service quality, the disconfirmation paradigm implies that a consumer's



expectations of quality will be confirmed when the service is performed as expected and negatively disconfirmed when expectations are not met (O'Connor, Shewchuk, & Carney, 1994). To advance the expectations side of the gap model, researchers have defined two levels of expectations: the desired and the adequate. In between these two levels of expectations is the “zone of tolerance”, which reflects the degrees of heterogeneity individuals are willing to accept (Caruana, 2002).

As depicted in Figure 1, Parasuraman et al. (1991) demonstrate the zone of tolerance, or the difference between the adequate and desired states from the customer perspective. The authors made a distinction in this research regarding customers' variability in expectations related to outcomes vs. process. As noted in Figure 1, outcome expectations have a narrower window of tolerance than process expectations. While the model was developed based on the service and retail industries, a comparable assumption could be made within the context of health care since the expectations people have about outcomes of treatment may be much higher than those aspects of the process, and at the same time much narrower in range of tolerance (Thompson & Sunol, 1995).



Source: Parasuraman, A., Berry, L. L., & Zeithaml, V. A. (Thompson & Sunol, 1995).  
Used with permission.

Figure 1: Zone of tolerance.

For example, wait times in the emergency department fall into the realm of a *process distinction* whereas patients being treated and released from an emergency department or discharged from an inpatient stay with a definitive and treated diagnosis would more clearly reflect an *outcomes expectation* with the health care experience. Thompson and Sunol (1995) proposed extending this model to notions of expectations of the structure of a service and a corresponding zone of tolerance. These authors provided examples of expectations around *structure of service*, such as staffing levels of a particular area of the hospital and patients' perceptions of this structure (Thompson & Sunol, 1995). Whether wait times are considered a process expectation or a structure of service expectation, the zone of tolerance is an effective concept when considering those activities that may impact overall measures of satisfaction beyond simply the

expectations for the outcome of the health care experience. Recognizing that patients come to the hospital with preconceived expectations about process, structure, and outcomes, health care leaders can use these inputs to prioritize and act upon interventions to impact differing expectations.

Even with an apparently objective measurement, such as ED wait time, the interested observer would note that satisfaction is not a measure of absolute time but the evaluation of it as long or short or acceptable or unacceptable from the patient's perspective (Thompson & Sunol, 1995). In this current study, the actual vs. perceived ED wait time, which can easily be defined as a process expectation, was measured by the patient as acceptable or unacceptable based on a 5-point Likert scale within the survey instrument.

When comparing measures of satisfaction between customers and patients it is important to distinguish between characteristics of goods and services. Goods are typically assessed through an objective measurement of physical attributes of a product, such as strength, durability, precision, and so forth. Three distinguishing characteristics of services that must be acknowledged and understood with regard to evaluating service quality in the health care arena include: intangibility, heterogeneity, and inseparability (O'Connor & Bowers, 1990). Frequently, the outputs of services are intangible, or services that cannot be verified and tested for quality prior to consumption, which results in more than one version of reality recognized in the service market. Heterogeneity refers to the variation in performance by different employees providing the same service as compared to a consistent and uniform standard by which to judge the service. Employees with varying levels of technical competency or even differing personalities may deliver

widely different service than the employer intended. Inseparability refers to the simultaneous production and consumption of the service product. More challenging than other service industries, in health care, consumers/patients are intensely involved and can affect the delivery process of health care and therefore impact their own service quality (O'Connor & Bowers, 1990).

While the SERVQUAL instrument is utilized in the service and retail industries and research on satisfaction encompasses consumers of routine goods and services, the reality is that services are more difficult to assess than goods. This is primarily due to the service characteristics of intangibility, heterogeneity, and inseparability that must be considered when evaluating customer perceptions of service and quality (O'Connor & Bowers, 1990). O'Connor and Bowers (1990) noted that services, whether core or peripheral, must satisfactorily meet consumer expectations. One poor perception of quality, or in this case service, can result in a similar low quality image for the entire package (O'Connor & Bowers, 1990). This was the basic premise of this current study, to determine if a poor image of the *peripheral* care rendered in the emergency department would influence the total patient experience from ED to inpatient stay.

This current research was designed to investigate whether or not a poor perception of the emergency department experience, based on unmet expectations of ED wait times, influenced inpatient hospitalization. The concept of inseparability, described as the simultaneous production and consumption of the service, could be no more clearly illustrated than through the real life example of patients moving between different departments and levels of care within the health care experience. Given the characteristics of intangibility, heterogeneity, and inseparability, evaluating services

consumed in the emergency department may rely heavily on the ability of multiple providers to perform multiple processes to achieve satisfaction beyond a patient's expectations.

### **Understanding Expectations**

Researchers have demonstrated that patients who evaluate services as being of higher quality tend to be more satisfied, more apt to use the service again in the future, more likely to comply with given medical advice and treatment regimens, and presumably more likely to attain better health outcomes (O'Connor et al., 1994). At the same time, researchers have also proposed several alternatives to the formation of expectations. One viewpoint is that expectations are based on a consumer's belief, probability, or prediction of what will occur during a service interaction. Another view is that consumers rely on standards they believe a product should offer, known as experience-based norms or a desired performance, in meeting their wants and needs (O'Connor et al., 1994).

Prior to developing the SERVQUAL instrument, Parasuraman et al. (1994) performed an extensive qualitative assessment by conducting structured interviews with nationally recognized executives from service organizations. These executive interviews revealed a key set of gaps regarding managers' perceptions of service quality expectations compared to those of consumers. These gaps included the following:

Gap 1: Consumer expectation – management expectation

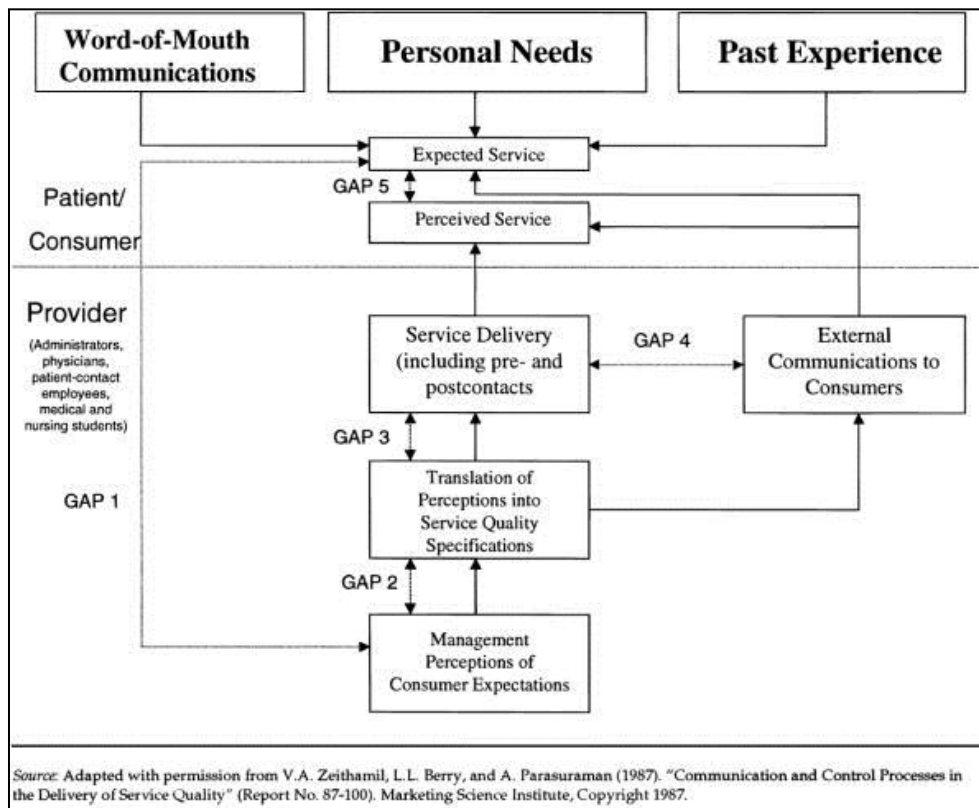
Gap 2: Management perception – service quality specification

Gap 3: Service quality specification – service delivery

Gap 4: Service delivery – external communications

Gap 5: Expected service – perceived service (O'Connor et al., 1994)

As illustrated in Figure 2, Gap 5 is a function of the four other gaps. Therefore, the smaller the variance in Gaps 1-4 the more likely consumers will perceive adequate or excellent service quality. A manager cannot act upon Gap 5 directly; concerns must be addressed through Gaps 1–4. As denoted in Figure 2, patients formulate expectations of their care based on a variety of sources, such as word-of-mouth, personal needs, and past experiences (O'Connor et al., 1994). As depicted in Figure 2, the most fundamental activity is to obtain accurate information about consumer expectations in order to address Gap 1.



(O'Connor et al., 1994). Used with permission.

Figure 2. Service quality model.

Without a clear understanding of patient expectations, providers will continue to fall short in improving patient satisfaction by *assuming* they know how to achieve these expectations. Researchers have indicated that health care professionals are more likely to make assumptions about patient expectations because they have special knowledge and technical competencies that are not easily judged by the average patient. In a study of a large multispecialty group medical clinic, O'Connor et al. (1994) revealed that clinic contact employees, physicians, and administrators consistently underestimated patient expectations for each of the five SERVQUAL dimensions with the exception of tangibles (physical buildings, appearances), which tended to be overestimated. Moreover, the researchers discovered that physicians had the poorest overall understanding of patient expectations in this study as compared to administrators and patient contact employees. The dimension of responsiveness (willingness to help customers and provide prompt service) and empathy were the most significant of the five dimensions with regard to physicians underestimating patient expectations (O'Connor et al., 1994).

### **Factors Impacting Expectations**

Within the health care arena, affective states may be of greater importance than many of the cognitive evaluations used to measure satisfaction in highly emotional and unfamiliar situations (Thompson & Sunol, 1995). Thompson and Sunol (1995) described factors that influence the development and modification of an individual's expectations, as noted in Table 1. The authors outlined several personal and social influences which combine aspects of cognitive and affective perspectives of the consumer (Thompson & Sunol, 1995).

Table 1  
*Influences in Developing and Modifying Expectations*

(A) Personal	(B) Social
Needs	Sociodemography
Values	Social Norms
Valencies	Group Pressures
Roles/Capabilities	Task Requirements
Experience	Conditions/Restrictions
Information	Equity
Intentions	
Attributions	
Interest	
Moods/Emotions	
Perceived Consequences of Outcomes	

(Thompson & Sunol, 1995)

Thompson and Sunol (1995) acknowledged that absent from the elements of influence in Table 1 is a third set of influences which develops and modifies expectations toward the context within which a relationship is set. In the context of health care there is a distinct relationship that differs from most other relationships created between a consumer and a service or retail provider. The first major difference within the context of health care is the time duration of an interaction. Unlike many other consumer experiences, interactions in health care are typically more than monetary in nature and can last for years, especially for patients with chronic illnesses (Thompson & Sunol, 1995).

Dozier, Kitzman, Ingersoll, Holmberg, and Schultz (2001) developed an instrument to measure patient perceptions of the quality of nursing care. In doing so, the authors attempted to move beyond measures of satisfaction, which Dozier et al. described as a comparison between what is expected and what happened, toward a focus on patient perceptions of needs being met. This “perception of care” is the basis for the current HCAHPS instrument that ties hospital reimbursement to scores on the survey. Dozier et



al. (2001) asserted that the most important issue related to the measure of patient satisfaction has to do with the potential impact of individual service expectations on patient satisfaction ratings. The authors suggested that in order for patients to judge whether they are satisfied, they must compare their experiences with their expectations (Dozier et al., 2001). However, many individuals may not have had a past experience with the emergency department or been exposed to the procedures or environment of a hospital setting upon which to build expectations.

Bowling et al. (2012) suggested that patient satisfaction is achieved when there is an excess of perceived delivery over what is hoped for, anticipated, and expected. Conversely, unmet expectations lead to dissatisfaction. Consumer satisfaction research has provided the framework for the expectancy-disconfirmation theory articulated within the patient satisfaction literature. The disconfirmation paradigm suggests that customer satisfaction is determined by the magnitude and direction of the gap between expectations and perceptions of performance (Thompson & Yarnold, 1995).

### **Emergency Department Patient Satisfaction**

A significant number of empirical studies regarding patient satisfaction reside in the emergency medicine literature. The American College of Emergency Physicians promotes a variety of studies and subsequent interventions aimed at improving emergency department satisfaction results.

Multiple independent studies within the emergency department have focused on actual and perceived ED wait times and whether there is a correlation between wait times in the ED and patient satisfaction. Thompson et al. (1995) studied the impact of ED wait times on patient satisfaction. In a 12 month study of 1,631 visitors to a suburban ED, the

authors found that patient perceptions of wait times were less than expected and associated with a positive overall satisfaction with the ED encounter ( $p < .001$ ) (Thompson et al., 1996).

In a separate study, the authors addressed whether patients' actual wait times were similar to what they perceived them to be (Thompson et al., 1996). The authors compared patients' actual and perceived wait times to first contact with the ED physician and overall total ED wait times. The authors excluded any patients who were admitted to the hospital from the ED citing that boarding time, or time waiting in the ED for an inpatient bed, created a separate set of variables outside the control of the emergency department. Researchers surveyed 776 patients or parents of patients within 4-6 weeks of their visit to an urban ED. Investigators noted that 49% of respondents overestimated their perceived wait time to see the physician while 27.6% underestimated their perceived wait times. Approximately 36.6% accurately estimated their Total Wait Time (TWT) in the emergency department (Thompson et al., 1996).

Bursch et al. (1992) surveyed 258 ED patients via phone survey one week after their emergency department visit. Using a multiple regression analysis the authors identified the following five variables as most relevant to ED satisfaction: (a) patient satisfaction with the amount of time it took before being cared for in the ED; (b) patients' ratings of how caring the nurses were; (c) how organized the ED staff was; (d) how caring the physicians were; and (e) patient satisfaction with the amount of information the nurses gave them about what was happening to them (Bursch et al., 1993). The authors determined that the total time patients spent in the ED and patients' perceptions of their wait times for an ED bed were not as important to emergency department patient

satisfaction as receiving prompt care upon arrival to the department and caring service from the nurses and physicians (Bursch et al., 1993).

In a comprehensive review of the literature on predictors of emergency department satisfaction, Boudreaux and O’Hea (2004) classified statistically significant predictors of emergency department patient satisfaction including: interpersonal interactions with providers, perceived technical skills, perceived waiting times, and actual waiting times (Boudreaux & O’Hea, 2004). While a positive interaction with providers was found to be a strong predictor of emergency department patient satisfaction, multiple studies have measured both actual and perceived ED wait times and reported that *perceived* wait times were much more of a determinant of patient satisfaction than *actual* wait times. Cassidy-Smith, Baumann, and Boudreaux (2007) further suggested that targeting perceived wait times and expectations rather than actual wait times may offer greater promise for improving ED patient satisfaction (Cassidy-Smith et al., 2007).

Press Ganey, a nationally recognized organization that provides survey instruments and data analysis for patient satisfaction, completed a Pulse Report in 2010 and reported that patients who spent more than two hours in the emergency department reported less overall satisfaction with their visit than those who were in the ED for less than two hours (Boustani et al., 2012). Press Ganey based wait times described in the Pulse Report on patients’ self-reported time spent in the ED. Press Ganey researchers recently evaluated patients’ actual and perceived wait times in a case study at the Moses Taylor Hospital in Scranton, PA. Researchers measured actual wait times in the ED using a patient tracking system and noted that patient perceptions of wait times and actual wait times spent in the ED were fairly accurate. On average, patients overestimated their time

spent in the ED by approximately 20 minutes (Boustani et al., 2012).

Based on Press Ganey data of patients waiting for an outpatient treatment, patients who waited from zero to 15 minutes were the most satisfied patients compared to those who waited more than one hour for an outpatient treatment; these individuals were the least satisfied (Boustani et al., 2012).

In a study addressing inpatient satisfaction of 2,854,198 patients from 2,067 hospitals receiving care between January 1, 2010 and December 31, 2010, of those admitted as an inpatient from the emergency department only 64% of patients rated their hospital stay in the “top box”. This compares to those who were not admitted from the emergency department and rated 68.2% in the top box of satisfaction. According to the Press Ganey Pulse Report (2010), a patient admitted from the emergency department within the Press Ganey data base reflected a lower mean score of 84.6 as compared to an 87.5 mean score if admitted from outside the emergency department (Boustani et al., 2012).

Press Ganey also conducted a study at WellStar Kennestone Hospital and found that patients admitted to the hospital from the emergency department were less satisfied than those who were not. This is a significant finding since recent national statistics reported that 13.3% of patients presenting to the emergency department are admitted to the hospital each year (“National Hospital Ambulatory Medical Care Survey: 2010 Emergency Department Summary”, 2010). Nationally, the emergency department typically accounts for 45%-50% of total hospital admissions (Baker, 2010). Since the emergency department satisfaction survey instruments are intentionally separated from the inpatient survey, emergency department team members may focus on addressing

patient expectations and measures of satisfaction may be aimed more at those released from the emergency department than those who are to be admitted. In an effort to understand the relationship between emergency department experiences and inpatient satisfaction, the expectancy-disconfirmation theory needs to be further defined and understood in order to determine the potential significance in understanding this corollary of patient satisfaction with care.

### **Expectancy–Disconfirmation Theory**

In marketing research, the consumer forms expectations of a given product or brand prior to the purchase. These expectations are internal predictions of the nature and level of performance the buyer may expect to receive from the product. Once the product is purchased and used, the consumer compares the perceived performance with the initial expected performance. Confirmation results when there is a close match between consumer expectations and perceived actual performance. The term disconfirmation is used when there is a mismatch between the expected and perceived actual performance. A disconfirmation can be either positive or negative. A positive disconfirmation occurs when the perceived performance exceeds the expectation. A negative disconfirmation occurs when the perceived performance falls below the expectation or there is a gap in the level of expectation (Mormer, 2012). The response to the disconfirmation is an emotional reaction of satisfaction or dissatisfaction, depending upon the direction of the mismatch (Mormer, 2012).

There are four constructs that are encompassed in the basic expectancy-disconfirmation paradigm, including: expectations, perceived performance, disconfirmation, and satisfaction. A variety of research designs have validated the

relationships between these constructs within the disconfirmation literature. Specifically, a number of studies have focused on the resulting dissatisfaction when expectations are disconfirmed. Additionally, several researchers theorized the components and nature of pre-purchase expectations within the consumer satisfaction literature (Mormer, 2012).

Oliver (1980) demonstrated that attitude plays a key role in the formation of expectation and satisfaction (Mormer, 2012). Linder-Pelz developed a conceptual theory of patient satisfaction based on the satisfaction theories of fulfillment, discrepancy, and equity. As cited by Mormer (2012), Linder-Pelz (1982) hypothesized determinants of health care satisfaction based on expectations, value, entitlement, occurrences, and interpersonal comparisons. Despite variability among theories all of them focused on the fulfillment of expectations. Linder-Pelz developed several hypotheses reflecting the social psychological determinants of patient satisfaction as follows:

1. Satisfaction scores will be directly related to the sum of the products of beliefs (expectations) and value scores regarding various aspects of the care;
2. Satisfaction scores will vary positively with the extent to which perceived occurrence concurs with prior expectations;
3. Satisfaction scores will be directly related to the perceived occurrence score less the expectation score all divided by the expectation score;
4. Satisfaction will vary positively with the concurrence of perceived occurrence and prior expectation only when the object is valued;
5. A combination of positive expectation and positive perceived occurrence will yield the highest satisfaction scores, while positive expectation and negative occurrence will result in lower satisfaction scores. (Mormer, 2012)

Hypotheses on patient satisfaction reflected the significance of expectancy theory (Mormer, 2012). Further, as expectancy-disconfirmation theory has become more prevalent in patient satisfaction research, more empirical studies have been conducted based on this specific theoretical concept.

Hudak et al. (2004) surveyed 122 hand surgery patients preoperatively to gain insights about patients' most important expectations for agreeing to surgery and whether this expectation was fulfilled postoperatively. The authors confirmed their primary hypothesis: *Satisfaction will vary positively with the extent to which a patient's perceived outcome concurs with preoperative predicted expectations.* The authors also validated a second hypothesis: *The effect of expectations on satisfaction will be strongest when expectations are disconfirmed; or that satisfaction will be highest if 'better than expected' (positive disconfirmation), then 'as expected' (simple confirmation), or finally 'worse than expected' (negative disconfirmation)* (Hudak et al., 2004). Based on consumer behavior and market literature, the expectancy-disconfirmation theory posits a direct relationship between satisfaction and the fulfillment of expectations; it is currently considered a dominant theory in health care (Hudak et al., 2004).

Bowling et al. (2012) examined existing models and definitions of patient satisfaction to further explore expectation theory. The authors developed an expectations questionnaire aimed at measuring pre-visit ideals and realistic expectations and post-visit experiences and met expectations. Bowling et al. surveyed 20 patients about their General Practitioner (GP) experiences and 20 patients regarding their outpatient hospital experiences. Overall, the authors determined that patients' pre-visit expectations of what would happen were lower than their ideals of what would happen. The majority of

patients' post-visit experiences (met expectations) fell somewhere along the continuum, indicating that some patients had unmet expectations (e.g., advice about health/condition, cause of condition, how to manage condition, and benefits/side effects of treatments). Others had expectations that were exceeded. General Practitioner patients had higher pre-visit expectations than hospital patients and also had higher post-visit met expectations.

The highest ideal expectations among the GP sample included expectations about cleanliness, information about where to go, convenient appointments and being seen on time, helpfulness of reception staff, knowledge of the doctor, clear and easy to understand information from doctor, involvement in treatment decisions, and reduction in symptoms/problems. Among the hospital sample, the lowest met expectations included being seen on time, choice of hospitals if referred, and choice of doctors with whom to consult (Bowling et al., 2012). The most common influences on expectations of the total population sampled were patients' previous consultations/experiences of health services and health care staff/professionals. There were few associations between expectations and other characteristics.

General Practitioner patients rather than hospital patients were also independently predictive of expectations met, which might have been due to greater exposure to attending general practitioners than hospital clinics, and therefore a greater ability to calibrate expectations appropriately. Bowling et al. (2012) recognized that an awareness of patients' expectations and unmet expectations by the health care team should enable staff members to better understand patient perspectives and thereby improve communication and ultimately meet expectations (Bowling et al., 2012).



According to Bowling et al. (2012), terminology is also an important issue related to expectation management, with a range of ambiguous terms frequently used to address different types of expectations. Examples of these terms include: *expectancy probability* (judgments about the likelihood of an event occurring based on past experience, self-confidence, and perceived difficulty of the goal); *value expectations* (hopes or desires concerning an event, expressed as wants or needs); *process expectations* (expectations about forthcoming processes such as medical attention, health information, pleasant surroundings); and *outcome expectations* (expectations concerning the consequences of treatment, such as the ability to return to work/previous way of life, physical fitness).

According to the authors, differing types of expectancy will fluctuate among patients in multiple ways. For example, expectancies of processes of care will differ from treatment outcome expectancies as the latter are less certain and will be influenced by the person's attitude towards risk-taking (Bowling et al., 2012). Expectancies of processes of care are similar to the zone of tolerance in which patients have more tolerance for gaps in process expectations than outcome expectations. Given the evidence that expectations of care are associated with recent experiences of health care, it is important to distinguish between *informed expectations* (in which people have received sufficient, timely information to reach an informed judgment) and *subjective expectations* (where people have insufficient information to make an informed judgment) (Bowling et al., 2012).

The concept of informed expectations vs. subjective expectations is an important consideration with regard to emergency department patients' expectations of their care. Further, these expectations are likely based on preconceived opinions or experiences. Subjective expectations are more difficult to measure than process expectations.

Expectations about patient flow processes from entry into the emergency department to transfer into the inpatient unit are the basis for this current research.

### **Hindsight and Foresight**

Zwick, Pieters, and Baumgartner (1995) identified hindsight rather than foresight expectations as a more potent influence on disconfirmation and satisfaction. Hindsight bias or “I knew it all along” is a person’s tendency to consistently exaggerate in hindsight what could have been expected in foresight (Zwick et al., 1995). Hindsight bias occurs when hindsight expectations are systematically different from foresight expectations in the direction of outcome knowledge. The authors acknowledged the importance of hindsight bias in satisfaction formation and its relationship in the expectancy-disconfirmation model of customer satisfaction (Zwick et al., 1995).

Churchill and Surprenant (1982) described a linear function of prepurchase expectations, perceived product performance, and the degree to which expectations are positively or negatively disconfirmed during consumption. Based on this model, satisfaction increases with the level of perceived product performance and the magnitude of consumers’ prepurchase expectations (Churchill & Surprenant, 1982). The expectancy–disconfirmation model assumes that people can access their original expectations when they compare product performance to prepurchase expectations. In the case of health care, this implies that a patient would have had a previous health care experience with which to compare. Hindsight bias phenomenon suggests that this may not be a reasonable assumption to make since knowledge of how the product actually performed may distort a consumer’s memory of how the product was expected to perform. Not only can hindsight bias impact the effective survey completion by patients

and impressions of their hospitalization, it can also provide flawed results if a patient has had no previous experiences in a hospital setting.

According to Churchill and Surpenant (1982), recall of initial (foresight) expectations may be biased in the direction of perceived product performance (hindsight expectations). Hence, it would seem to be necessary to incorporate hindsight bias into the expectancy-disconfirmation model of consumer satisfaction and to consider the potential effects that hindsight expectations may have on relational interactions between consumer and provider in future studies.

According to Olson and Dover (1979), a product has to have some personal relevance in order for disconfirmation effects to be clearly evidenced. In the case of an emergency department or inpatient visit, this attribute would appear to be met given the personal nature of health care. Hawkins and Hastie (1990) reflected that hindsight bias is likely to occur when the outcome has emotional significance (when it is self-reliant), such as a health care outcome, and when the event is subject to imaginative consideration before its outcome is known (Zwick et al., 1995).

For consumers who are susceptible to hindsight bias, disconfirmation and satisfaction should be mostly a function of hindsight expectations whereas foresight and hindsight expectations should be equally valid predictors of disconfirmation and satisfaction when there is no hindsight bias (Zwick et al., 1995). Zwick et al. (1995) also discovered that when foresight expectations, hindsight expectations, and performances are compared simultaneously, a clear pattern of hindsight bias emerges. Findings from this research indicated that the expectancy–disconfirmation model of satisfaction has to be modified to account for hindsight expectations. The authors suggested that a

consumer's decision to choose a product determines whether or not a special provision for hindsight bias is needed (Zwick et al., 1995).

In the case of patients admitted to the inpatient unit, individuals may come to the emergency department with the expectation to be treated and released only to be admitted, which is likely not of their choosing. A patient's decision to either depart from or be admitted via the emergency department aligns with the theory that preconsumption expectations and the degree to which they are confirmed or disconfirmed by actual experience with the product impact the degree of hindsight bias (Zwick et al., 1995). In reality, patients who enter the emergency department either by private vehicle or ambulance most likely do not choose to be admitted to the same degree as a patient who enters the hospital for an elective procedure or from a physician's office.

Given that patient satisfaction surveys may typically be completed as long as six weeks from discharge, it is likely that any foresight expectations would have been forgotten. In fact, Zwick et al. (1995) argued that disconfirmation and satisfaction ratings could simply reflect the impact of the information that is the most accessible in memory at the time of judgment, which is usually the information that has been most recently used. To expect that patients can segregate the foresight and hindsight expectations of their emergency department experiences from their inpatient experiences is a question that requires further study.

In an extensive review of the literature, Sitzia and Wood (1997) noted that expectancy-disconfirmations continue to emerge as a fundamental element of satisfaction research. More specifically, the Discrepancy Model was described as a modification of the expectancy-disconfirmation model. The Discrepancy Model describes satisfaction as

a relative concept, defined mainly by the perceived discrepancy between patients' expectations and their actual experiences. These authors concurred that other variables, such as age, level of education, gender, and ethnicity may also have an influence on satisfaction. However, the authors suggested that none of these variables are as influential as expectations (Mormer, 2012).

Mormer (2012) specifically utilized the expectancy-disconfirmation theory and determined that disconfirmation was a strong predictor of satisfaction in first time hearing aid users. The perception of hearing aid performance and the disconfirmation contributed heavily to satisfaction, and seemed to carry similar weighting to one another. This study provided some of the first empirical evidence that the expectancy-disconfirmation model of satisfaction could be applied to the study of patient satisfaction for first time hearing aid purchasers in the United States (Mormer, 2012).

There is significant support in the health care literature for basing patient satisfaction analysis on the expectancy-disconfirmation theory. Currently, VBP outcomes tie reimbursement of hospitals to patient perceptions of care after their inpatient stay regardless of their point of entry, e.g., admitted directly to the hospital or arrived via the emergency department. Inpatients are surveyed within 48 hours to six weeks from discharge under the VBP model using the HCAHPS survey instrument ("HCAHPS Patient's Perspective of Care Survey", 2013). Currently, half of the patients admitted to hospitals across the country arrive via emergency department while the other half are admitted in an elective fashion from their home or physician's office (Baker, 2010).

In January, 2014, The Joint Commission's Patient Flow Standard began assessing hospitals on a new criterion aimed particularly at addressing emergency department

delays for admission or patient *boarding*. The Joint Commission defines boarding as the practice of holding patients in the ED or a temporary location after a decision to admit or transfer is made (Calloway, 2012). According to the Joint Commission, a hospital should set its goals with attention to patient acuity and best practices in order to address boarding timeframes not to exceed four hours in the interest of patient safety and quality of care (Calloway, 2012).

Studies conducted regarding emergency department satisfaction and inpatient satisfaction may not distinguish between hospitals in which boarding of patients is a predominant activity. The Joint Commission developed the “Patient Flow Standard” to specifically address national concerns related to boarding of emergency department patients (Calloway, 2012). There is equivocal data in the current literature regarding emergency department care as associated with inpatient satisfaction. Further, it is unclear how the practice of boarding patients in the emergency department may affect measures of inpatient satisfaction.

The varied sources of inpatient admissions may contribute to the level of overall satisfaction of inpatient stays. This finding was noted in the Press Ganey Pulse Report (2010) reflecting that patients admitted from the ED were less satisfied with their inpatient stay than those who were not admitted through the ED. It may also be based upon patients’ expectations regarding the acuity of their illnesses which result in an unexpected hospital admission. Variables to consider regarding patient expectations of their inpatient stay may include the following: Point of entry for care (i.e., emergency department, physician referral, elective procedure) and factors that may contribute to hindsight bias (i.e., asymmetry of information, variability, recollection of services and

timing in distribution of inpatient survey). Given the concept of expectancy-disconfirmation theory, hindsight bias must be considered with regard to how a patient's previous experiences with an emergency department or hospital setting contributes to the formulation of these expectations. Patients may also have different expectations based on whether they arrived to the hospital emergently via an ambulance or whether the reason for admission was elective in nature.

There are a number of variables to consider when evaluating the relationship between care received in the emergency department and patient satisfaction with their inpatient care. Utilizing the expectancy-disconfirmation theory, this current study focused singularly on patients' perceived expectations with emergency department wait times as related to their overall satisfaction with inpatient care.

### **Literature Summary**

The definition of satisfaction ranges from an individual's values and preconceived expectations to multiple definitions of the term "expectation." In previous studies of patient satisfaction, Lawler suggested that we need to understand the concept of patient satisfaction before we can truly explain why certain factors cause it and others are caused by it (Linder-Pelz, 1982). While patient satisfaction is being studied in this particular case in response to a reimbursement model, researchers have suggested that the success of health care institutions will depend on the degree of satisfaction by patients, payers, physicians, and health care employees (O'Connor & Bowers, 1990).

Developing an understanding of patient expectations through empirical studies can serve as a conceptual framework for further work on this topic. Additionally, several of Maister's principles can be easily translated to emergency department patient care. For

instance, the principle that “people want to get started” clearly fits the emergency department/ inpatient experience (Maister, 1984). Upon arrival to the emergency department patients want to be seen and to interact with a health care provider quickly. In fact, this disconnect is the reason that organizations track the “left without being seen” metric to determine the volume of patients that sign in but leave the emergency department before being seen by a provider. “Door to doctor” time is another measure of patient satisfaction that is tracked in emergency departments across the country. Many hospitals now share these wait times via online communication methods within their communities to help set patient expectations and to entice patients to travel a bit farther for a shorter ED wait time.

Once admitted, patients in the emergency department want to move quickly through the transition of care from the ED to the inpatient unit. These admitted patients’ expectations have now been determined resulting in an inpatient stay versus leaving the hospital from the emergency department door through which they previously entered. Given Maister’s (1984) principle, patients may not feel their care has “started” until they arrive in an inpatient bed. Patients may see arrival to the inpatient bed as only the beginning of their treatment plan and become frustrated with any delays in admission.

In most cases, care for admitted patients has already started in the emergency department where transition orders are written by the attending physician and typically the treatment plan is well underway. However, communication of this transition of care process to the patient may not occur effectively while in the emergency department. For some patients, this lack of communication about transition orders starting in the ED may induce anxiety and concern that they have not begun progressing to their ultimate goal of



discharge until they arrive on the inpatient unit. This follows another of Maister's principles which is "anxiety makes waits seem longer" (Maister, 1984).

While health care providers may distinguish levels of care as emergency care, pre- and post-operative care, intensive care, and so forth, patients more often see the time spent in the hospital as one continuum of care. Hospitals typically divide their patient satisfaction surveys into these same distinct areas as well. Given the volume of patients that are admitted through the emergency department, it is important to develop a conceptual framework and to study the impact of the emergency department perception of care as related to satisfaction with the inpatient hospital stay. Utilizing the expectancy-disconfirmation theory, several hypotheses can be tested to determine if there are any associations between emergency department satisfaction and patient satisfaction with inpatient care.

### **Conceptual Framework**

Locke (1967) and Maister (1984) placed significance on addressing one's values as a method to achieve satisfaction versus the expectancy-disconfirmation paradigm which debates satisfaction as a result of meeting or exceeding preconceived expectations. Creating a theoretical approach to assist with developing effective interventions to address patient perception of care is a complex set of dynamic and interwoven concepts.

Based on the expectancy-disconfirmation theory and hindsight bias, the first question to examine is whether or not patients can accurately formulate expectations of their ED and inpatient experiences if they have never previously experienced them. Further, assuming that patients have preconceived opinions about their willingness to

wait for health care services similar to other consumer services, do these preconceived notions impact their satisfaction?

Since patients are experiencing shorter lengths of hospital stays on average than in previous years, do patient perceptions of their emergency department and inpatient visits blend into one perceived experience? Can, or do, patients completing inpatient satisfaction surveys disaggregate the care they received in the emergency department from the inpatient hospital stay when they complete the survey? Patients typically arrive to the emergency department with one easily measurable expectation: the amount of time they wait before being seen. Whether or not a patient has previously experienced a visit to an emergency department, this relative measurement of time spent waiting is a preconceived expectation similar to a waiting experience outside of the health care experience.

Patients also arrive to the emergency department expecting their problems to be resolved and to be treated with compassion and kindness. However, these items are more subjective in nature and difficult to measure. The online posting of emergency department wait times is one method to set foresight expectations for patients prior to their arrival. Perceived wait time is so significant that Press Ganey, through its emergency department measurement tool, asks patients to rate their perceived wait time in the ED. Press Ganey has suggested that exceeding patient expectation of their wait times is one method to increase emergency department patient satisfaction (Thompson & Yarnold, 1995; Thompson et al., 1996).

Effectively measuring and thereby improving patient satisfaction is a challenging phenomenon. Satisfaction is always relative, and rates will change when standards of

comparison or expectations change even though the object of evaluation may remain constant (Linder-Pelz, 1982).

## **Chapter 3**

### **RESEARCH METHODOLOGY**

The purpose of this study was to determine if there is a relationship between actual and perceived wait times and inpatient satisfaction. The study also attempted to validate previous research findings that perceived vs. actual wait times are a greater predictor of emergency department satisfaction. Before answering these questions, it was important to account for any variance within the sample population as related to perceived and actual wait times reported by patients. Based on data from electronic medical records for patients who present to the emergency department and are admitted, this study determined if patients with shorter lengths of stay (< 4 days) and shorter perceived wait times (as denoted in their ED wait time rating) in the emergency department had higher ratings of inpatient satisfaction.

#### **Research Question**

Is there a relationship between actual or perceived ED wait times and inpatient satisfaction for those patients admitted through the emergency department?

#### **Hypothesis**

There is a great deal of support in the emergency department literature that patients with shorter perceived wait times have improved overall perceptions of their emergency department care (Thompson et al., 1996). If lengths of stay in the hospital are now even shorter than in previous years, it is likely that patients may consider their emergency department experience as part of their overall inpatient stay. Therefore, the

overriding question is whether or not patients' perceived or actual wait times in the emergency department influence their perceptions of their inpatient stay, and if so by how much?

Because emergency department literature supports the concept that shorter wait times lead to improved ED patient satisfaction, emergency department leaders have targeted their efforts on shortening the total time of patient care in the emergency department through process improvements in patient flow. If the same sense of urgency were assigned to the admitted patient, would inpatient satisfaction improve? Further, if patients were aware that their treatment plan for admission actually started in the emergency department would this alter their perceptions of their wait times?

Nationally recognized coaches on improving patient satisfaction have encouraged organizations to address their emergency department first, as they now realize that the ED has become the front door for admitted patients. Because the emergency department is the front door, it not only drives patient flow but also patient perceptions of flow (Baker, 2010). As noted in the Press Ganey Pulse Report (2010), admitted patients are less satisfied with their hospital stays if they transition directly from the emergency department (Boustani et al., 2012). Therefore, the purpose of this study was to determine if there is a relationship between patients' preconceived expectations and actual wait times in the emergency department and their level of satisfaction with inpatient care.

While HCAHPS is the measurement tool utilized to score hospitals under the Value Based Purchasing program, this study used data from the inpatient and emergency department satisfaction tool utilized by Press Ganey. Satisfaction ratings are based on a 5-point Likert scale ranging from very poor to very good. Press Ganey assigns a

numerical value as: *very poor* = 0, *poor* = 25, *fair* = 50, *good* = 75, and *very good* = 100 for each particular response to the questions on the survey.

Since boarding of patients, or the concept of holding patients in the emergency department due to lack of inpatient capacity, can impact patient perceptions of the emergency department, this study was designed to utilize data from a hospital that had little to no patient boarding, thereby mitigating emergency department “boarding” as a confounding variable. Table 2 outlines the direction of variables for the metrics in this study.

Table 2  
*Direction of Variables for Study Metrics*

	<b>Actual ED wait time in minutes</b>	<b>Perceived ED wait time rating</b>	<b>Inpatient satisfaction rating</b>	<b>Emergency department satisfaction rating</b>
<b>HIGH number</b>	Bad	Shorter wait time- Good	Good	Good
<b>LOW number</b>	Good	Longer wait time- Bad	Bad	Bad

The following hypotheses were tested:

H1: Patients who rate their wait times lower, defined as less satisfied in the emergency department, will have lower ratings of their inpatient satisfaction score than those who are more satisfied with their ED wait times. For H1 we investigated the relationship between a “very good” rating defined as  $\geq 75$  inpatient satisfaction score and a very good rating of perceived ED wait times using chi square with McNemar’s test and logistic regression.

The regression model took the form:

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon, \text{ where}$$

$Y = \log_e (P(\text{very good inpatient satisfaction}) / 1 - P(\text{very good inpatient satisfaction}))$  and  $X_1$  is log of very good rating of ED wait time.

We formally tested the hypothesis that the term  $\beta_1$  in the model is statistically significantly different from zero using the Wald statistic. That is:

$H_0: \beta_1 = 0$  and  $H_A: \beta_1 \neq 0$

We tested the hypothesis at the 0.05 level of significance and constructed a 95% confidence interval (CI) for  $\beta_1$  which established the direction of the relationship between a very good rating of inpatient satisfaction and a very good rating of their ED wait time. A 95% CI above 0 indicated a significant positive relationship, where higher scores for patient ratings of ED wait time (indicating shorter wait times) demonstrated a higher probability of a very good rating of inpatient satisfaction scores. This result was considered as support for research hypothesis 1. A 95% CI including 0, or completely below 0, would fail to support research hypothesis 1.

H2: Patients with longer actual wait times in the emergency department will have lower ratings of their inpatient satisfaction. For H2, we investigated the probability of whether shorter actual ED wait times were associated with a very good rating on inpatient satisfaction using logistic regression. The regression model took the form:

$$Y = \beta_0 + \beta_2 X_2 + \epsilon, \text{ where}$$

$Y = \log_e (P(\text{very good inpatient satisfaction}) / 1 - P(\text{very good inpatient satisfaction}))$  and  $X_1$  is log of actual emergency department wait time in minutes.

We formally tested the hypothesis that the term  $\beta_2$  in the model is statistically significantly different from zero using the Wald chi square statistic.

That is:  $H_0: \beta_2=0$  and  $H_A: \beta_2 \neq 0$

We tested the hypothesis at the 0.05 level of significance and construct a 95% confidence interval (CI) for  $\beta_2$  which established the direction of the relationship between a very good inpatient satisfaction rating of actual ED wait time in minutes. A 95% CI below 0 indicated a significant negative relationship where shorter actual ED wait times were associated with higher probability for a very good inpatient satisfaction rating. This result was considered as support for research hypothesis 2. A 95% CI including 0 or completely above 0 would fail to support research hypothesis 2.

H3: Patients with shorter actual wait times in the ED will have a higher rating of very good responses on their emergency department satisfaction scores than those who had longer actual ED wait times. For H3, we investigated the relationship between the actual ED wait time in minutes and probability of rating very good in emergency department using ordinary logistic regression. The regression model took the form:

$$Y = \beta_0 + \beta_2 X_2 + \varepsilon, \text{ where}$$

$Y = \log_e (P (\text{very good emergency department satisfaction}) / 1 - P (\text{very good emergency department satisfaction}))$  and  $X_2$  is log of actual emergency department wait time in minutes.

We formally tested the hypothesis that the term  $\beta_2$  in the model is statistically significantly different from zero using the Wald chi square statistic.



That is:  $H_0: \beta_2=0$  and  $H_A: \beta_2 \neq 0$

We tested the hypothesis at the 0.05 level of significance and construct a 95% confidence interval (CI) for  $\beta_2$  which established the direction of the relationship between a very good emergency department satisfaction rating and actual ED wait time. A 95% CI below 0 indicated a significantly negative relationship where shorter ED wait times reflected a higher probability of a very good rating of emergency department satisfaction. This result was considered as support for research hypothesis 3. A 95% CI including 0 or above 0 would fail to support research hypothesis 3.

H4: Patients with a shorter perceived ED wait time as measured by very good responses in the emergency department will have higher probability of very good ratings of their emergency department satisfaction than those who had longer (lower) ratings of their perceived ED wait times. For H4, we investigated the relationship and the probability that a very good response on emergency department satisfaction defined as  $\geq 75$  and the probability that a very good response on perceived ED wait time as defined as  $\geq 75$  on the survey existed using chi square and McNemar's test and logistic regression. The regression model took the form:

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon, \text{ where}$$

$Y = \log_e (P(\text{very good emergency department satisfaction}) / 1 - P(\text{very good emergency satisfaction}))$  and  $X_1$  is log of very good rating of emergency department wait time.

We formally tested the hypothesis that the term  $\beta_1$  in the model is statistically significantly different from zero using the Wald chi square statistic.

That is:  $H_0: \beta_1=0$  and  $H_A: \beta_1 \neq 0$

We tested the hypothesis at the 0.05 level of significance and construct a 95% confidence interval (CI) for  $\beta_1$  which established the direction of the relationship between emergency department satisfaction and patient rating of ED wait time. A 95% CI above 0 indicated a significant positive relationship, where higher scores for patient ratings of ED wait time (indicating shorter wait times) were associated with higher probability of a very good inpatient satisfaction rating. This result was considered as support for research hypothesis 4. A 95% CI including 0 or below 0 would fail to support research hypothesis 4.

H5: Patients with inpatient lengths of stay of less than four days and shorter perceived (very good rating of ED wait time) will have a higher probability of a very good rating of their inpatient satisfaction. For H5, we investigated the relationship and probability between a very good response to inpatient satisfaction and a very good response to patient rating of their ED wait time and then looked for an interaction based on the patient's overall length of stay (LOS) of four days or less using logistic regression. The regression model took the form:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon, \text{ where}$$

$Y = \log_e (P(\text{very good inpatient satisfaction}) / 1 - P(\text{very good inpatient satisfaction}))$  and  $X_1$  is log of very good rating of ED wait time indicator for  $LOS \leq 4$  days (1 if  $LOS \leq 4$  days and 0 if  $LOS > 4$  days).  $X_3$  was the interaction term between a very good rating of ED wait time and the indicator of  $LOS \leq 4$  days ( $X_3 = X_1 X_2$ ).

We formally tested the hypothesis that the term  $\beta_3$  in the model is statistically significantly different from zero using the Wald chi square statistic.

That is:  $H_0: \beta_3=0$  and  $H_A: \beta_3 \neq 0$

We tested the hypothesis at the 0.05 level of significance. If the interaction was statistically significant, then the effect of the probability of a very good rating of ED wait time on a very good rating of inpatient satisfaction was dependent upon the length of stay. In such a case, we constructed 95% confidence intervals (CIs) for  $\beta_1$  and for  $\beta_1 + \beta_3$ . These would quantify the magnitude of the relationship between a very good inpatient satisfaction rating and very good rating of ED wait time when length of stay is  $> 4$  days ( $\beta_1$ ) and when LOS is  $< 4$  days ( $\beta_1 + \beta_3$ ). A 95% CI above 0 indicated a significant positive relationship where shorter (higher very good scores) perceived ED wait times and shorter length of inpatient stays (four days or less ) were associated with higher very good ratings on satisfaction. This result was considered as support for research hypothesis 5. A 95% CI that includes 0 or is completely below 0 for  $\beta_1$  or  $\beta_3$  would fail to support research hypothesis five.

H6: Patients with higher ratings of their emergency department satisfaction will have a higher probability for very good responses of their inpatient satisfaction. For H6, we investigated the relationship between higher emergency department satisfaction based on very good scores as defined as  $\geq 75$  score and very good ratings of their inpatient satisfaction scores defined as  $\geq 75$  using logistic regression. The regression model took the form:

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon, \text{ where}$$

$Y = \log_e (P (\text{very good inpatient satisfaction}) / 1 - P (\text{very good inpatient satisfaction}))$  and  $X_1$  is log of very good rating of emergency department satisfaction.

We formally tested the hypothesis that the term  $\beta_1$  in the model is statistically significantly different from zero using the Wald chi square statistic. That is:

$H_0: \beta_1=0$  and  $H_A: \beta_1 \neq 0$

We tested the hypothesis at the 0.05 level of significance and constructed a 95% confidence interval (CI) for  $\beta_1$  which established the direction of the relationship and probability that higher ratings of emergency department satisfaction were associated with higher ratings of inpatient satisfaction. A 95% CI above 0 indicated a significant positive relationship, where higher scores of ED satisfaction were associated with higher probability of very good inpatient satisfaction ratings.

### **Data Collection**

Following IRB approval, data from a single community hospital in southeast Louisiana, patient perceptions of wait time, care, and actual wait time were collected. Data were collected utilizing inpatient survey responses from a nationally validated and reliable survey tool that was mailed to patients within 48 hours to six weeks of discharge. Satisfaction ratings from patient responses regarding perceptions of care and ED wait times were based on a 5-point Likert scale; scale responses ranged from very poor to very good and were cross matched with actual wait times in the emergency department from the electronic medical record.

The survey instrument contained 66 items used to address multiple questions. Significant to this study, however, were answers to four specific questions that addressed perceived wait times in the emergency department, satisfaction with the care in the

emergency department, and satisfaction with inpatient care. To be included in the sample population, all four of the following questions must have been answered:

Wait time in the emergency department before admitted

Overall rating care/treatment in emergency department

Likelihood of recommending the emergency department

Overall rating of their inpatient stay

Patient responses to the Likert scale were converted to a numerical value and provided in the sample by the survey vendor. The assignment of values was: *very poor* = 0, *poor* = 25, *fair* = 50, *good* = 75, and *very good* = 100 for each particular response to each question.

Inpatient surveys were administered to 100% of patients who were admitted to the community hospital from the emergency department during the time period from April 2013 through January 2014. Patients who did not answer all four questions were excluded from the sample.

Patients under 19 years of age and pregnant women greater than 20 weeks gestation were also excluded. For patients with more than one emergency department visit during this time period, the first visit with the completed inpatient survey answering all four questions was utilized so that only one unique patient encounter was included in the sample.

Data were collected from the patients' electronic medical record based on the registration information that is consistently provided upon every patient encounter to calculate actual emergency department wait time and total hospital lengths of stay. Each

patient's admit date and time was easily captured from the electronic medical record which are computer generated within the electronic medical record system that resides on the health care system server. Patients cannot move from one level of care to another without transfer within the electronic medical record occurring. The same data entry field was used to capture the date and time stamp on each patient consistently. The variable "door to discharge" was used to denote the time the patient entered the ED door and registered until they discharged from the ED and were transported to the inpatient destination. This time period was considered the "actual" wait time in the ED for purposes of this study. The Length of Stay (LOS) was calculated from the electronic medical record from the date and time of inpatient admittance until the date and time of discharge from the hospital.

### **Statistical Analysis**

Descriptive statistics with means and standard deviations for quantitative variables and percent of categorical measures were included to assess for invalid or missing data. Data are presented to describe the sample population. Chi square and logistic regression was performed. Regression models were developed to determine the relationship between the dependent variable of satisfaction with inpatient stay and the independent variables of the patients' ratings of ED wait times, actual wait times in the emergency department, and length of inpatient hospital stay. A regression also evaluated for statistical significance and direction of a relationship between emergency department satisfaction based on a very good rating defined as  $\geq 75$  and actual and perceived wait times in the ED. A standard multiple regression was performed to determine if lengths of

stay which are less than four days and shorter perceived ED wait times (based on a very good rating) could predict a very good rating of inpatient satisfaction.

## **CHAPTER 4**

### **RESULTS**

#### **Descriptive Statistics**

A total of 422 patients responded to the survey during the collection period. Regardless of their entry point (i.e., emergency department or direct admit), inpatients were randomly selected and mailed the HCAHPS survey. Patients within this sample were first randomly selected to receive the HCAHPS survey regarding their inpatient hospitalization. In a given month, 57% of inpatients at this hospital are randomly selected for the HCAHPS survey.

For this investigation, the remaining 43% of inpatients were mailed the modified inpatient survey with additional emergency department questions included in the appendix. During this time period response rates to the inpatient surveys ranged from 15-20%. Those patients randomly selected for the HCAHPS survey were only able to complete the CMS prescribed satisfaction survey and were not able to respond to the additional emergency department customized questions designed as part of this study. Health care organizations are prohibited from modifying the CMS HCAHPS survey or educating patients regarding the specifics of the survey (U.S. Health and Human Resources, n.d.).

For Value Based Purchasing purposes, CMS calculates the “top-box” raw score for the nine HCHAPS measures that are publicly reported. A top box raw score is the percentage of patients who chose the most positive or “top box” response to the HCAHPS survey items (HCAHPS, 2013). For the satisfaction survey instrument utilized



in this study, a “very good” rating was considered to be the most positive response. While achieving a “good” rating in many organizations is acceptable, the focus for health care leaders should be in moving a patient’s experience from “good” to “very good”.

Of the original 422 respondents who rated their overall inpatient experience, 254 were excluded because they did not answer all four questions. This resulted in a final sample of 168 patients who responded to all four questions. Of this final sample, 54.2% were male and 45.8% were female (see Figure 3).



Figure 3. *Number of survey respondents.*

As shown in Table 3, the age of respondents ranged from 21 to 95 years, with a mean age 68.7 years. The total length of stay (LOS) for inpatients ranged from less than 24 hours to as much as 23 days, with a mean and median inpatient LOS of 2.6 and 2.0 days, respectively. The mean time patients spent in the emergency department, from the time they entered the door of the ED until discharged from the emergency department was 4.07 hours. Among patients who left the Emergency Department and were admitted (n=168), 58.9% were eventually discharged from the Progressive Care unit, 32.7 % were discharged from the two Medical Surgical units, 4.8% from the Intensive Care unit, 3.0% from the Mother Baby unit, and one patient remained in the ED for an inpatient stay of 9.3 hours.

Table 3  
*Descriptive Statistics Based on Survey Responses*

Characteristic	Overall (n=168)
<b>Gender</b>	<b>n (%)</b>
Male	77 (45.8)
Female	91 (54.2)
<b>Age</b>	
Range	21-95
Mean $\pm$ sd	68.7 $\pm$ 13.85
Median (range)	69.5 (74)
<b>Inpatient Location</b>	<b>n (%)</b>
Progressive Care Unit	99 (58.9)
ICU	8 (4.8)
Medical Surgical Unit	55 (32.7)
Mother Baby Unit	5 (3.0)
ED	1(.6)
<b>Total Wait time in ED</b>	<b>n (%)</b>
Mean in hours/minutes	4.07
Mean $\pm$ sd	4.07 $\pm$ 1.24
Median in hours/minutes	3.95
<b>Total Inpatient LOS</b>	<b>n (%)</b>
Less than 4 days	137 (81.5)
4 days or more	31 (18.5)

### Statistical Analysis

For analysis, the following study outcomes were transformed into binary variables: overall inpatient satisfaction, emergency department satisfaction, perceived emergency department wait time, and the likelihood to recommend the emergency department. Logistic regression analysis was then used to estimate the probability of each of the outcomes. The answers, originally based on a 0-100 scale, were transformed to denote a very good response as  $\geq 75$  rating. These responses were coded as 1. Otherwise scores of 0, 25, or 50 were coded as 0.

The chi-square test of independence was used to evaluate whether there was any association between the variables and to test the null hypothesis of independence. For

measures with a clear association, McNemar’s test was subsequently used to test the null hypothesis of marginal homogeneity. This test for marginal homogeneity was used to determine whether the probability of a “very good” outcome on one patient satisfaction question was similar to a very good outcome on the other specific question being measured. Table 4 reflects the outcome of an association between perceived ED wait time and inpatient satisfaction. The chi-square (1df, 12.94,  $p < 0.001$ ) and McNemar’s ( $p < 0.001$ ) was statistically significant with cell counts noted in the following table.

Table 4  
*Chi Square with McNemar’s Test for Perceived ED Wait Times and Inpatient Satisfaction (H1)*

	Rating of perceived wait time	
	Very Good	Otherwise
Inpatient satisfaction		
Very Good	119	36
Otherwise	4	9

Logistic regression was performed to determine the effects of patient perceived emergency department wait time and inpatient satisfaction. As denoted in Table 5 this hypothesis was statistically significant at ( $p < 0.001$ ) at the 95% confidence interval. The logistic regression revealed that the odds of a very good rating of inpatient satisfaction was 7.43 times higher (95% CI: 2.162 - 25.83) for patients with a very good rating of their ED wait time.

Table 5  
*Logistic Regression of Perceived ED Wait Time and Inpatient Satisfaction (H1)*

	$\beta$	OR	95% CI		Sig.
			Lower	Upper	
Rating of ED wait time	2.007	7.43	2.162	25.58	0.001
Constant	1.386	4.00			<0.001

A logistic regression was conducted to determine the effects of *actual* emergency department wait time and *inpatient* satisfaction. The relationship of actual emergency department wait times and inpatient satisfaction experience was not statistically significant as noted in Table 6 using logistic regression (Wald =.723 1df, OR .833, p =.395).

Table 6  
*Logistic Regression of Actual ED Wait Time and Rating of Inpatient Satisfaction (H2)*

	$\beta$	OR	95% CI		Sig.
			Lower	Upper	
Actual ED wait times	-.182	.833	.547	1.269	.395
Constant	3.244	25.360			.001

A logistic regression was performed to determine effect of actual emergency department wait times and *emergency* department satisfaction. This indicator was found to be statistically significant  $p = 0.023$  at the 95% CI with the output denoted in Table 7.

Pearson's Correlation revealed a statistically significant inverse relationship  $r = -.184$  ( $p = .017$ ). Logistic regression similarly demonstrated an inverse relationship where every hour increase in actual ED wait time was associated with a reduction in the odds of a very good emergency department satisfaction rating by .62 times in this sample (95% CI: .404 - .936).

Table 7  
*Logistic Regression of Actual ED Wait Time and ED Satisfaction Rating (H3)*

	$\beta$	OR	95% CI		Sig.
			Lower	Upper	
Actual ED wait time	-.486	.615	.404	.936	.023
Constant	4.808	122.427			<0.001

Hypothesis 4 tested an association between perceived emergency department wait times and emergency department satisfaction. The chi-square (1df, 24.67,  $p < 0.001$ ) and McNemar's ( $p < 0.001$ ) was statistically significant with cell counts described in Table 8.

Table 8  
*Chi Square with McNemar's Test of Perceived ED Wait Time and ED Satisfaction Rating (H4)*

Perceived ED Wait Time	Rating of Emergency Department Satisfaction	
	Very Good	Otherwise
Very Good	122	35
Otherwise	1	10

A logistic regression was performed to determine the effect of perceived emergency department wait time and emergency department satisfaction. As denoted in Table 9, this relationship was found to be statistically significant ( $p = < 0.001$ ). Given this association, and McNemar's test ( $p < 0.001$ ) there was not high agreement between very good ratings for both measures. Logistic regression demonstrated that a patient who rated their ED wait time as very good was 34.8 times more likely to rate their ED experience as very good ( $p < .001$ ).

Table 9  
*Logistic Regression of Perceived ED Wait Time and ED Satisfaction (H4)*

	$\beta$	OR	95% CI		Sig.
			Lower	Upper	
Rating of ED wait time	3.55	34.85	4.313	281.732	.001
Constant	1.253	3.500			<0.001

A logistic regression was performed to determine the effect of inpatient satisfaction and perceived ED wait time for patients with a total length of stay of four days or less. When performing the regression, controlling for the LOS parameters, the sample population changed from  $n=168$  to  $n= 150$ . Logistic regression revealed that the

odds of patients having a very good inpatient experience, controlling for length of stay and the effect of a very good rating of their emergency department wait time, was 4.85 times in this sample (95% CI: 1.279-18.395). As denoted in Table 10, the regression was not statistically significant when LOS and perceived wait time were included together in the model ( $p = 0.231$ ).

Table 10  
*Logistic Regression of Inpatient Satisfaction and Perceived Wait Time in the ED and Patients with a LOS of  $\leq 4$  days (H5)*

	$\beta$	OR	95% CI		Sig.
			Lower	Upper	
Perceived ED wait time	1.579	4.851	1.279	18.395	.020
LOS $\leq 4$ days	-.370	.691	.377	1.266	.231
Constant	1.682	5.375			<0.001

Chi square and McNemar's test were used to determine association and marginal homogeneity regarding emergency department satisfaction and inpatient satisfaction. The chi-square (23.45, 1df,  $p < 0.001$ ) was statistically significant, however, McNemar's test was not statistically significant ( $p = .791$ ) revealing that the likelihood of answering very good on ED satisfaction has the same probability as rating very good on inpatient satisfaction. Cell counts are presented in Table 11.

Table 11  
*Chi Square and McNemar's Test of ED Satisfaction and Inpatient Satisfaction (H6)*

Rating of ED satisfaction	Rating of inpatient satisfaction	
	Very Good	Otherwise
Very Good	149	8
Otherwise	6	5

Logistic regression was performed to determine an association between emergency department satisfaction and inpatient satisfaction and was found to be

statistically significant  $P = <0.001$ . As denoted in Table 12, the regression demonstrated that the odds were 15.5 times (95% CI: 3.890 - 61.920) that a rating of very good on ED satisfaction would result in a very good rating of inpatient satisfaction.

Table 12  
*Logistic Regression of the Emergency Department Satisfaction and Inpatient Satisfaction (H6)*

	$\beta$	OR	95% CI		Sig.
			Lower	Upper	
ED satisfaction	2.742	15.521	3.890	61.920	<0.001
Constant	.182	1.200			.763

This chapter presented the results of statistical testing for research on the influence of actual emergency department wait times, perceived emergency department wait times, total length of stay (when four days or less) on inpatient satisfaction, and emergency department satisfaction. The next chapter offers a discussion, recommendations, and conclusions of this research

## **CHAPTER 5**

### **DISCUSSION**

The purpose of this study was to determine whether actual or perceived emergency department wait times could influence inpatient satisfaction or emergency department satisfaction. An additional variable related to patient length of stay in the hospital was included in this analysis to determine if a higher rating of ED wait time controlling for a shorter LOS could be a predictor of whether patients would rate their inpatient stays as very good. The theoretical framework of expectancy-disconfirmation was used to frame the following hypotheses;

1. Patients who are more satisfied with their ED wait times are likely to be more satisfied with their inpatient experience;
2. Patients with shorter actual ED wait times are likely to be more satisfied with their inpatient experience;
3. Patients with shorter actual ED wait times are likely to be more satisfied with their emergency department experience;
4. Patients with a shorter perceived ED wait time ( higher rating) are likely to be more satisfied with their emergency department experience;
5. Patients with inpatient lengths of stay of four days or less and a higher rating of their emergency department wait time are likely to be more satisfied with their inpatient experience;



6. Patients who are more satisfied with their emergency department experience are likely to be more satisfied with their inpatient experience.

### **Review of Findings**

The original sampling frame for this study included 422 patients with a final sample of 168 patients that responded to all four questions. Given that women greater than 20 weeks gestation were excluded, it is not surprising that only 3% of the sample discharged from the Mother Baby unit. Because most patients transfer out of the Intensive Care unit to the Progressive Care unit, it was also not unexpected to have a higher percentage discharging from the Progressive Care unit than directly from the Intensive Care unit.

More females responded to the survey (54.2%) compared to males (45.8%). Eighty-one percent of the sample population stayed less than four days, and patients experienced an average wait time in the emergency department of 4.07 hours.

Hypothesis 1 assumed that patients who were more satisfied with their ED wait time were likely to be more satisfied with their inpatient experience. In this study, a relationship between a very good rating of inpatient satisfaction and a very good rating of perceived ED wait time was found to be statistically significant ( $p < .001$ ). The logistic regression revealed within the 95% CI that the odds of a very good rating of inpatient satisfaction was 7.43 times higher for patients with a very good rating of their ED wait time. Therefore, the sample data supported Hypothesis 1.

Hypothesis 2 tested whether patients with shorter actual wait times in the emergency department had higher ratings of their inpatient satisfaction. The relationship of actual emergency department wait times and inpatient satisfaction experience was not

statistically significant  $p = .395$ . The Pearson's Correlation between a shorter ED wait time and inpatient overall satisfaction did show an expected inverse relationship  $r = -.066$  but it was not statistically significant ( $p = .397$ ). Therefore, Hypothesis 2 was not supported.

Hypothesis 3 assumed patients with shorter actual emergency department wait times were likely to be more satisfied with their emergency department experience than those with longer actual wait times. The relationship of patients' actual emergency department wait times and emergency department experience was statistically significant ( $p = .023$ ). Pearson's Correlation revealed a statistically significant inverse relationship  $r = -.184$  ( $p = .017$ ) and logistic regression similarly demonstrated within a 95% CI an inverse relationship where every hour increase in actual ED wait time was associated with a reduction in the odds of a very good emergency department satisfaction rating furthering support for Hypothesis 3.

Hypothesis 4 assumed patients with a higher rating of their ED wait time would have a higher rating of their emergency department experience and there was found to be a statistically significant relationship  $p < 0.001$ . Logistic regression demonstrated at the 95% CI that a patient who rated their ED wait time as very good was 34.8 times more likely to rate their ED experience as very good which supported Hypothesis 4.

Hypothesis 5 assumed that total length of stay (when four days or less) and a higher rating of perceived emergency department wait time would be associated with a higher rating of inpatient satisfaction. Using a two-tailed, Pearson's correlation to test the relationship between inpatient satisfaction and perceived emergency department wait time revealed a statistically significant relationship ( $r = .207$ ,  $p = 0.011$ ). However, when

testing the relationship between inpatient satisfaction and including total length of stay, there was not a statistically significant association  $r = -0.80$ ,  $p = .303$ . This was consistent when Pearson's was performed to test a relationship for patients with four days or less length of stay and inpatient satisfaction. This relationship remained inverse but not statistically significant  $r = -.103$ ,  $p = .211$ .

A multivariable logistic regression was performed to test the effects of shorter lengths of stay and a very good rating of ED wait time on inpatient satisfaction. The regression revealed within a 95% CI that the odds of patients having a very good inpatient experience, controlling for length of stay and the effect of a very good rating of their emergency department wait time, was 4.85 times in this sample. This compared to an OR of 7.43 which was demonstrated in Hypothesis 1 when total LOS was excluded from the model. Although with  $LOS < 4$  days in the model for Hypothesis 5 there was no statistically significant effect ( $p = 0.231$ ). Therefore, Hypothesis 5 was not supported when length of stay and perceived wait time were measured simultaneously with inpatient satisfaction. Because the OR remained strong this suggested that there remained a significant relationship between perceived ED wait time and inpatient satisfaction even if accounting for length of stay.

Hypothesis 6 assumed that patients with a higher emergency department rating would also have a higher rating of their inpatient satisfaction. The relationship of patients' very good rating of their ED experience and a very good rating of their inpatient experience was statistically significant ( $p < .001$ ). However, McNemar's test was not statistically significant ( $p = .791$ ) revealing that the likelihood of answering very good on ED satisfaction was the same as rating very good on inpatient satisfaction. Logistic

regression demonstrated within the 95% CI that the odds were 15.5 times that a rating of very good on ED satisfaction would result in a very good rating of inpatient satisfaction. Therefore, Hypothesis 6 was supported. Table 13 below demonstrates a summary of the statistical outcomes in relation to the hypotheses tested.

Table 13

*Summary of Results*

<b>Hypothesis</b>	<b>Statistically Significant</b>	<b>Supported or Not supported</b>
<b>H1: Higher rating of ED wait time results in higher rating of IP satisfaction</b>	<b>Yes</b>	<b>Supported</b>
<b>H2: Shorter actual ED wait time results in a higher rating of IP satisfaction</b>	<b>No</b>	<b>Not supported</b>
<b>H3: Shorter actual ED wait time results in higher rating of ED satisfaction</b>	<b>Yes</b>	<b>Supported</b>
<b>H4: Higher rating of ED wait time results in higher rating of ED satisfaction</b>	<b>Yes</b>	<b>Supported</b>
<b>H5: IP LOS <math>\leq</math> 4 days and rating of ED wait time will result in higher rating of IP satisfaction</b>	<b>No</b>	<b>Not supported</b>
<b>H6: Higher rating of ED satisfaction will result in higher rating of IP satisfaction</b>	<b>Yes</b>	<b>Supported</b>

**Assessment of Findings**

This study supported previous research by Cassidy-Smith et al. (2007) that noted “*perceived*” wait times were a much stronger predictor of ED satisfaction than actual wait times. Further, the study by Cassidy-Smith et al. demonstrated that, while less influential than perceived wait times, actual wait times did in fact influence emergency department satisfaction. Thompson et al. (1996) examined actual and perceived wait

times and found that wait time perceptions, not actual wait times, influenced ED satisfaction.

The findings of this current research question those by Thompson et al. (1996) as we found reductions in actual wait times *and* perceived wait times influenced higher ratings of satisfaction in the emergency department. While this current study went further than Thompson et al. (1996) and Cassidy et al. (2007) to determine if *actual* wait time in the *emergency* department could be a predictor of *inpatient* satisfaction, this finding was not supported in this sample.

During the period of April 2013 through January 2014, the study hospital had an average wait time of 247 minutes (4 hours, 7 minutes). HCAHPS and emergency department care data are reported on a public website, *Hospital Compare*, for all United States Hospitals that care for Medicare or Medicaid patients. According to *Hospital Compare*, for the reporting period of April 2012 through March 31, 2013, the national average for time in the emergency department until transferred to an inpatient bed was 275 minutes. For this same time period (April 2012 through March 31, 2013), the study hospital reported on *Hospital Compare* an average of 261 minutes, 14 minutes faster than the national average ED wait time (U.S. Health and Human Resources, n.d.). A sample of *Hospital Compare* can be seen in Appendix B.

One of the most significant challenges related to measuring and comparing hospital metrics on a national scale is that the indicators on the public website are not current and significantly lag in terms of metrics. The premise behind the publicly reported information is not only to drive value-based reimbursement, but to provide consumers with information to help them make informed health care decisions. Having

benchmark data for local, state, and national wait times may provide consumers with clearer expectations about an emergency department experience. As many organizations post their emergency department wait times on local websites and software applications, *Hospital Compare* remains the broadest and most consistent source of publicly reported ED wait times; even though data may be several months delayed.

While actual wait times in the emergency department did not predict inpatient satisfaction in this study, consumers utilizing the *Hospital Compare* website will come to an emergency department with preconceived expectations regarding the amount of time they may spend waiting. As a consumer's knowledge of hospital operational metrics improves over time, it will be important for leaders to determine methods that address patients' expectations of the care they receive. Not until the publicly reported emergency department wait times for admitted patients became available in 2013 did consumers truly have a national benchmark by which to develop their own internal expectations.

Surprisingly, the patient's length of stay in the hospital had no statistically significant association on achieving a very good rating of the inpatient experience. Because there is a trend in hospitals today toward shorter lengths of stay, it was hypothesized that perhaps the lines between the emergency department visit and the inpatient stay would be blurred for the patient completing the satisfaction survey after discharge. In this study, neither LOS of four days or longer or less than four days had any statistical significant influence on inpatient satisfaction. Because 81.5% of patients in this study had LOS < four days and an average actual ED wait time of 247 minutes, which is not excessive compared to the national averages reported on *Hospital Compare*, this may

have contributed to the lack of statistical significance for a relationship between actual emergency department wait time and inpatient satisfaction.

## **Significance of Findings**

This research is one of only a few quantitative studies on the relationship between emergency department actual and perceived wait times, length of stay, and inpatient satisfaction. Study results further validate previous work on perceived vs. actual wait times in the ED. More importantly, these findings add to the emerging literature on methods to improve the inpatient experience for the significant numbers of patients that enter the inpatient setting through the emergency department doors. Hospitals that are only focusing on improving their actual ED wait time while not taking into consideration the patients' perceived expectations of their wait time should consider this component as well.

## **Limitations**

The study was conducted at one community hospital in Southeast Louisiana that does not typically “board” patients waiting for an inpatient bed. These findings are more pertinent to community hospitals vs. larger metropolitan hospitals. While the sample size was adequate for this study, a larger sample may have provided a more useful comparison as it relates to actual wait time and inpatient satisfaction. The sample population during this time period was originally 422; however, 254 were excluded due to not answering all four questions, resulting in a sample size of 168. The inpatient survey tool was modified to include three additional questions regarding the emergency department experience (see sample Appendix A).

Because the Centers for Medicare & Medicaid Services' HCAHPS Quality Assurance Guidelines V7.0 prohibit modification of the HCAHPS survey tool, this limited the sample during this time period (U.S. Health and Human Resources, n.d.). All



patients surveyed who completed the HCAHPS survey had to be excluded from the final sample population. However, because all patients were randomly selected to receive the HCAHPS survey in lieu of the inpatient survey, this should not be a limiting factor for the generalizability of this study design.

Another potential limitation of this study is that acuity of patients presenting to the emergency department was not considered. According to Boudreaux, Friedman, Chansky, and Baumann (2004), urgent patients, more so than emergent or routine patients, have demonstrated greater satisfaction with emergency department experiences. Additionally, patients' perceptions of their wait time may be influenced by the manner in which the staff communicates with them regarding treatments or delays. There was no attempt to measure variation between the actual emergency department wait time and patients' perception of the wait time. Finally, methods to improve actual emergency department wait times were underway at this hospital during this time period; however, none of the staff or physicians was aware that the study was being conducted.

### **Recommendations for Management Practice**

In the service industry, production and consumption occur simultaneously, a phenomenon that has been termed inseparability (O'Connor & Bowers, 1990). In health care, patients may be producing information or in some cases biologicals for testing while simultaneously consuming services via treatment protocols or medications. While these processes are occurring patients' expectations about the services they receive are being confirmed or disconfirmed based on whatever limited knowledge they bring to the relationship with the provider and the organization.

It may be challenging for most patients to assess the technical quality of their provider and the technical competency of the organization as a whole, but it is not as difficult for consumers to give a rating of whether or not their expectations with regard to preconceived notions about wait times were met. With more transparent information available regarding hospital quality and service, it is likely that patients will arrive with even greater preconceived notions about what they should expect from their health care provider. While wait times may not be considered by some providers as a critically important element impacting a positive clinical patient outcome, they must not be ignored.

In the current health care environment, hospital leaders must focus on a plethora of quality and service indicators to remain competitive and financially viable. As such, leaders should expand efforts involving patient perceptions of care to include perceptions about wait times and patient experiences. Reducing actual wait times is important for a variety of quality and safety considerations and may involve adding resources, physical beds, or other costly interventions.

The findings of this current study suggested that it is also important for leaders to consider methods to create greater congruence between patient expectations and reality, which is likely to result in confirmation or positive disconfirmation of patient experiences and ultimately greater satisfaction. Without empirical support to address patient perceptions, hospital leaders may omit an important component to improving emergency department and inpatient satisfaction.

Emergency department physicians are trained to triage or determine severity of presenting complaint and discharge individuals from the ED or recommend timely

admission. Current ED strategies to improve patient satisfaction in the emergency department include keeping the patient informed of pending test results and diagnostic and treatment options. However, in many instances, patients with an admission disposition still housed within the confines of the emergency department frequently appear to be no different to the staff than patients housed in the confines of the ED who are still waiting for a definitive disposition. Simple visual cues when an ED patient has received admitting orders may convey a different perception to the patient and the staff.

Emergency department staff and physicians should consider that patients' perceptions of their emergency department experiences continue to cognitively develop even after the order to admit is written. Following Maister's principles (1984) that people want to get started, it is important that patients in the emergency department understand that their inpatient care has commenced even while they remain in the ED. As described by the zone of tolerance, patients have less tolerance for deviations in their expectations of process than they do of outcomes (Parasuraman et al., 1995). Patients can more easily judge wait times than treatment outcomes in this same manner.

Cassidy et al. (2007) generated equivocal findings regarding the effect of educating patients with respect to the ED experience by including information about triage and how it effects the order of being seen. However, Thompson et al. (1996) determined that a quality method of presenting information, particularly to the admitted patients, resulted in a higher reported rating of satisfaction. Given this information, a variety of communication methods could be utilized to establish patient expectations at the time of arrival and to keep patients informed throughout their stay. Use of technology like smart phones to assist patients in understanding where their treatment falls within the

plan of care is one innovative idea that could be explored. Bed boards and tracking systems are prominent in many hospitals today and are utilized to keep staff abreast of the workflow. However, methods to make this information more visible to the waiting patient may assist them in understanding the acuity of the patient population in the emergency department. Additionally, it may demonstrate how patients with more severe health needs require more immediate resources which delays patient flow in the ED until patients are stabilized.

Patients in the emergency department who are admitted are typically handed over to the ED nurse to prepare for transfer to the inpatient unit. Given the dynamics of a busy emergency department, patient's transferring out of the ED may understandably be a lower priority than those entering the ED with an unknown clinical condition. A visual cue or technological solution in the ED could be used to clearly signify to all the ED caregivers the patient has been admitted. This simple "signal" to all the caregivers in the ED could help foster a process for more frequent updates to the waiting admitted patient of their next steps in the continuum of their care. These recommendations may be of particular interest in hospitals with abundant inpatient capacity. In these environments, delays in admission or lack of updates to the patient may occur because the sense of urgency no longer exists for the stabilized patient with an inpatient disposition.

### **Recommendations for Further Research**

This analysis focused on patients' expectations based on a Likert of their ED wait time. Further studies could evaluate emergency department patients' expectations upon arrival to the ED and then compare pre-service expectations with post-service as another method to determine how realistic achieving patients' expectations of wait times may be

in a busy emergency department. Now that CMS is capturing actual emergency department wait times from hospitals throughout the country, a larger study could compare actual wait times and HCAHPS ratings of inpatient stays that would be of broader scope and more generalizable.

### **Summary**

As technology advances in the health care arena and publicly reported information about the intricacies of hospital operations becomes more prominent, hospital leaders will need to be progressively more creative about how they address the expectancy–disconfirmation paradigm as it relates to the patient experience. Since studies show that perceptions weigh more heavily than actual wait times, it is important that additional research be conducted regarding methods to increasingly create congruence between patients’ expectations and the reality of their experiences.

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APPENDIX A

PRESS GANEY SATISFACTION SURVEY

SAMPLE

	very poor	poor	fair	good	very good
	1	2	3	4	5
<b>SPECIAL SERVICES</b> (continued)					
6. How well the Occupational Therapist explained your treatment, progress and goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments (describe good or bad experience): \_\_\_\_\_

	very poor	poor	fair	good	very good
	1	2	3	4	5
<b>DISCHARGE</b>					
1. Extent to which you felt ready to be discharged	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Speed of discharge process after you were told you could go home	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Instructions given about how to care for yourself at home	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Help with arranging home care services (if needed)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments (describe good or bad experience): \_\_\_\_\_

	very poor	poor	fair	good	very good
	1	2	3	4	5
<b>PERSONAL ISSUES</b>					
1. Staff concern for your privacy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. How well your pain was controlled	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Degree to which hospital staff addressed your emotional needs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Response to concerns/complaints made during your stay	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Staff effort to include you in decisions about your treatment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Your rating of staff who transported you around the hospital	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Helpfulness of patient education instructions/materials	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Degree to which we ensured the safety of your medical care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments (describe good or bad experience): \_\_\_\_\_

	very poor	poor	fair	good	very good
	1	2	3	4	5
<b>OVERALL ASSESSMENT</b>					
1. How well staff worked together to care for you	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Likelihood of your recommending this hospital to others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Overall rating of care given at hospital	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments (describe good or bad experience): \_\_\_\_\_

Did a staff member visit you hourly during your stay?  Yes  No

Did any employee go out of their way to make your stay more pleasant? If so, please share with us (name, title, location): \_\_\_\_\_

Patient's Name: (optional) \_\_\_\_\_

Telephone Number: (optional) \_\_\_\_\_

All written comments are used to improve services at Ochsner- North Shore. However, if you would like to speak with someone to compliment staff or to express concerns regarding your stay, please contact an Ochsner- North Shore representative at (805) 648-5775.

Thank you for taking the time to provide us with your feedback!

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123456789



**INPATIENT SURVEY**

We thank you in advance for completing this questionnaire. When you have finished, please mail it in the enclosed envelope.

Please rate your visit ending on: **Precode 4**

**BACKGROUND QUESTIONS** (write in answer or fill in circle (for example ●) as appropriate)

- Patient's first stay here  Yes  No
- Admitted through the Emergency Department  Yes  No
- Was your admission unexpected?  Yes  No
- Did you have a roommate?  Yes  No
- Were you placed on a special or restricted diet during most of your stay?  Yes  No
- Did someone explain your extended life support (e.g., living will, advance directives, etc.) options?  Yes  No
- Did someone give you information about organ donation?  Yes  No
- Did someone give you information about the Patient's Bill of Rights?  Yes  No
- Do you have insurance that limits your choice of physician or provider (e.g., HMO or PPO)?  Yes  No
- Room number:
- Number of days in hospital:     days
- Compared to others your age, how would you typically describe your health? (fill in one circle only)

very poor	poor	fair	good	very good
○	○	○	○	○

**INSTRUCTIONS:** Please rate the services you received from our facility. Fill in the circle that best describes your experience. If a question does not apply to you, please skip to the next question. Space is provided for you to comment on good or bad things that may have happened to you.

Please use black or blue ink to fill in the circle completely. Example: ●

	very poor	poor	fair	good	very good
	1	2	3	4	5
<b>ADMISSION</b>					
1. Speed of admission process	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Courtesy of the person who admitted you	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments (describe good or bad experience): \_\_\_\_\_

	very poor	poor	fair	good	very good
	1	2	3	4	5
<b>EMERGENCY DEPARTMENT</b>					
Please answer only if you were admitted through the Emergency Department. If not, please skip to the next section.					
1. Overall rating of care and treatment received in the Emergency Department	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. How well you were kept informed about your medical condition and treatment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. How well you were kept informed about delays	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Length of time you had to wait in the Emergency Department before you were admitted to your room	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

this section continued on next page...

SAMPLE

APPENDIX B

HOSPITAL COMPARE SITE

**Timely & effective care: Emergency department care details** (Hospitalcompare.gov retrieved 4/13/2014)

[collapse](#)

**Timely emergency department care**

Measures	OCHSNER MEDICAL CENTER - NORTHSHORE, LLC	Louisiana Average	National Average	Data Collected	
				From	To
Average time patients spent in the emergency department, before they were admitted to the hospital as an inpatient <i>A lower number of minutes is better</i>	261 Minutes <sup>2</sup>	260 Minutes	275 Minutes	4/1/2012	3/31/2013
Average time patients spent in the emergency department, after the doctor decided to admit them as an inpatient before leaving the emergency department for their inpatient room <i>A lower number of minutes is better</i>	74 Minutes <sup>2</sup>	86 Minutes	97 Minutes	4/1/2012	3/31/2013
Average time spent in the emergency department before being sent home <i>A lower number of minutes is better</i>	153 Minutes	126 Minutes	137 Minutes	4/1/2012	3/31/2013
Average time patients spent in the emergency department before they were seen by a health care professional <i>A lower number of minutes is better</i>	29 Minutes	27 Minutes	27 Minutes	4/1/2012	3/31/2013

## APPENDIX C

### COPYRIGHT PERMISSION: ZONE OF TOLERANCE (FIGURE 1)

**From:** Mallory Lindsly  
**Sent:** Tuesday, April 08, 2014 3:05 PM  
**To:** Polly Davenport  
**Cc:** Kathleen Mcfadden  
**Subject:** FW: Requesting Permissions for Marketing Science Institute Report

**From:** Susan Keane [<mailto:skeane@msi.org>]  
**Sent:** Tuesday, April 08, 2014 10:42 AM  
**To:** Mallory Lindsly  
**Subject:** FW: Requesting Permissions for Marketing Science Institute Report

Dear Mallory,

We are happy to give permission for the request below. Please include the complete source acknowledgement.

Best,

Susan Keane, Editorial Director

Marketing Science Institute

**From:** Mallory Lindsly [<mailto:mlindsly@ochsner.org>]  
**Sent:** Tuesday, April 08, 2014 11:01 AM  
**To:** MSI - Marketing Science Institute  
**Subject:** Requesting Permissions for Marketing Science Institute Report

**From:** Mallory Lindsly  
**Sent:** Tuesday, April 08, 2014 9:54 AM  
**To:** '[pubs@msi.org](mailto:pubs@msi.org)'  
**Subject:** Requesting Permissions for Marketing Science Institute Report

To whom it may concern:

I am requesting permissions to use this attached figured from Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). ServQual: A Multiple-item scale for measuring consumer perceptions. *Journal of Retailing*, 64(1), 12.

Thank you,

**Mallory Lindsly**

Medical Editor, Publishing Services

Tel: [\(504\) 842-7394](tel:(504)842-7394) Fax: [\(504\) 842-5137](tel:(504)842-5137) Email: [mlindsly@ochsner.org](mailto:mlindsly@ochsner.org)

## APPENDIX D

### COPYRIGHT PERMISSION: SERVICE QUALITY MODEL (FIGURE 2)

**From:** Mallory Lindsly  
**Sent:** Tuesday, April 08, 2014 3:06 PM  
**To:** Polly Davenport; Kathleen Mcfadden  
**Subject:** FW: Copyright.com Order Confirmation

#### Payment Information

Mallory Lindsly  
[mlindsly@ochsner.org](mailto:mlindsly@ochsner.org)  
[+1 \(504\)8427394](tel:+15048427394)  
Payment Method: n/a

#### Order Details

#### International journal for quality in health care : journal of the International Society for Quality in Health Care

- Order detail ID:**64661015
- Order License Id:**3364380234093
- Article Title:**Expectations as Determinants of Patient Satisfaction: Concepts, Theory and Evidence
- Author(s):**THOMPSON, A. G. H. ; SUNOL, R.
- DOI:**10.1093/INTQHC/7.2.127
- Date:**Jun 01, 1995
- ISSN:**1353-4505
- Publication Type:**Journal
- Volume:**7
- Issue:**2
- Start page:**127
- Publisher:**OXFORD UNIVERSITY PRESS
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APPENDIX E

IRB APPROVAL



Institutional Review Board for Human Use
Form 4: IRB Approval Form
Identification and Certification of Research
Projects Involving Human Subjects

UAB's Institutional Review Boards for Human Use (IRBs) have an approved Federalwide Assurance with the Office for Human Research Protections (OHRP). The Assurance number is FWA00005960 and it expires on January 24, 2017. The UAB IRBs are also in compliance with 21 CFR Parts 50 and 56.

Principal Investigator: DAVENPORT, POLLY J

Co-Investigator(s):

Protocol Number: X131209004

Protocol Title: Relationship between Emergency department wait times and inpatient satisfaction

The IRB reviewed and approved the above named project on 12-10-13. The review was conducted in accordance with UAB's Assurance of Compliance approved by the Department of Health and Human Services. This Project will be subject to Annual continuing review as provided in that Assurance.

This project received EXPEDITED review.

IRB Approval Date: 12-10-13

IRB Approval Issued: 12-10-13

IRB Approval No Longer Valid On: 12-10-14

PAA Waiver Approved?: Yes

Marilyn Doss, M.A.
Vice Chair of the Institutional Review
Board for Human Use (IRB)

Investigators please note:

The IRB approved consent form used in the study must contain the IRB approval date and expiration date.

IRB approval is given for one year unless otherwise noted. For projects subject to annual review research activities may not continue past the one year anniversary of the IRB approval date.

Any modifications in the study methodology, protocol and/or consent form must be submitted for review and approval to the IRB prior to implementation.

Adverse Events and/or unanticipated risks to subjects or others at UAB or other participating institutions must be reported promptly to the IRB.

470 Administration Building
701 20th Street South
205.934.3789
Fax 205.934.1301
irb@uab.edu

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Alabama at Birmingham
Mailing Address:
AB 470
1720 2ND AVE S
BIRMINGHAM AL 35294-0104

**UAB IRB Approval of  
Waiver of Informed Consent and/or Waiver of Patient Authorization**

**Approval of Waiver of Informed Consent to Participate in Research.** The IRB reviewed the proposed research and granted the request for waiver of informed consent to participate in research, based on the following findings:

1. The research involves no more than minimal risk to the subjects.
2. The research cannot practicably be carried out without the waiver.
3. The waiver will not adversely affect the rights and welfare of the subjects.
4. When appropriate, the subjects will be provided with additional pertinent information after participation.

Check one:  **and** Waiver of Authorization (below)  
 **or** Waiver of Authorization (below)  
 Waiver of Authorization not applicable

**Approval of Waiver of Patient Authorization to Use PHI in Research.** The IRB reviewed the proposed research and granted the request for waiver of patient authorization to use PHI in research, based on the following findings:

1. The use/disclosure of PHI involves no more than minimal risk to the privacy of individuals
  - i. There is an adequate plan to protect the identifiers from improper use and disclosure.
  - ii. There is an adequate plan to destroy the identifiers at the earliest opportunity consistent with conduct of the research, unless there is a health or research justification for retaining the identifiers or such retention that is otherwise required by law.
  - iii. There is an assurance that the PHI will not be reused or disclosed to any other person or entity, except as required by law, for authorized oversight of the research study, or for other research for which the use or disclosure of PHI would be permitted.
2. The research cannot practicably be conducted without the waiver or alteration.
3. The research cannot practicably be conducted without access to and use of the PHI.

—OR—

**Full Review**

The IRB reviewed the proposed research at a **convened meeting** at which a majority of the IRB was present, including one member who is not affiliated with any entity conducting or sponsoring the research, and not related to any person who is affiliated with any of such entities. The waiver of authorization was approved by the majority of the IRB members present at the meeting.

Date of Meeting

Signature of Chair, Vice-Chair or Designee

Date

**Expedited Review**

The IRB used an **expedited review procedure** because the research involves no more than minimal risk to the privacy of the individuals who are the subject of the PHI for which use or disclosure is being sought. The review and approval of the waiver of authorization were carried out by the Chair of the IRB, or by one of the Vice-Chairs of the IRB as designated by the Chair of the IRB.

12-10-13  
Date of Expedited Review

*Marilyn Doss*  
Signature of Chair, Vice-Chair or Designee

Date 12-10-13