

# Administration of Emergency Medicine

## FRAMEWORK FOR ANALYZING WAIT TIMES AND OTHER FACTORS THAT IMPACT PATIENT SATISFACTION IN THE EMERGENCY DEPARTMENT

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**Abstract—Background:** Wait times and patient satisfaction are important administrative metrics in emergency departments (EDs), as they are critical to return patronage, liability, and remuneration. Although several factors have been shown to impact patient satisfaction, little attention has been paid to understanding the psychology of waiting and patient satisfaction. **Objective:** We utilize concepts that have been applied in other service industries to conceptualize factors that impact patient satisfaction. We focus on wait times, a key factor in patient satisfaction, and describe how these concepts can be applied in research and daily practice. **Discussion:** Patient satisfaction can be conceptualized as the difference between a patient's perceptions and their expectations. Perception is the psychological process by which an individual understands and interprets sensory information. Changes in the wait experience can decrease the perceived wait times without a change in actual wait times. Other changes such as improved staff interpersonal and communication skills that provide patients with an increased sense of the staff's dedication as well as a greater understanding of their care, can also affect patient perceptions of their care quality. These changes in patient perception can synergize with more expensive investments such as state-of-the-art facilities and increased ED beds to magnify their impact on patient satisfaction. Expectation is the level of service a patient believes they will receive during their ED visit. Patients arrive with expectations around the component of their care such as wait times, needed diagnostic tests, and overall time in the ED. These expectations are affected by

individual-specific, pre-encounter, and intra-encounter factors. When these factors are identified and understood, they can be managed during the care process to improve patient satisfaction. **Conclusion:** Interventions to decrease perception of wait times and increase the perception of service being provided, when combined with management of patient expectations, can improve patient satisfaction. © 2011 Elsevier Inc.

**Keywords—**emergency department; patient satisfaction

### INTRODUCTION

Emergency departments (EDs) provide a broad array of services to patients. These services range from care of emergent or urgent medical conditions to providing safety net care for vulnerable populations (1). Although certain patients do not have the ability to choose where they receive emergency care secondary to their acuity or financial and geographic constraints, the majority of patients seeking emergency care select where they receive their care. As such, patients can be seen as customers purchasing the service of unscheduled medical evaluation.

In all service industries, customer satisfaction is a key administrative metric, as it ensures return patronage and profitability (2,3). Customer satisfaction is even more important in continuous service industries (e.g., utilities,

telecommunications) and professional service industries (e.g., financial service, consulting, accounting, and legal firms), where it significantly impacts the variance in duration of relationships (4). Patients who visit an ED and are satisfied with the care received are more likely to return to the ED and other departments within the hospital, as well as recommend the hospital to others. In health care, patient satisfaction also impacts other key areas such as patient compliance and medico-legal risk (5,6). As a result, ED administrators are increasing their attention to this metric and incorporating patient satisfaction into their physician performance assessments and compensation plans (7).

A key predictor of level of patients' satisfaction with their ED care is wait times (8). Other predictors include staff bedside manner, clear communication, clear discharge instructions, availability of diagnostic tests, and technical competency (8). Although these attributes can predict level of satisfaction, they do not account for the consideration of the psychological factors that influence how patients perceive each of these attributes and their overall care. Other service industries have developed models to analyze the psychology of patient satisfaction (9–11). In this article, we examine ED patient satisfaction using some concepts that have been applied in other service industries. We discuss these concepts utilizing a model described by David Maister, who is widely regarded as one of the world's leading authorities on the management of professional service firms and who in 2002 was named one of the top 40 business thinkers in the world by *Business Minds/Financial Times* (12). We also discuss how these concepts can be applied to the ED, from both operational and research perspectives.

## DISCUSSION

### *A Patient Satisfaction Model*

A model published in 1985 by David Maister that has been applied in several other service industries which is suitable to analyze the psychology of patient satisfaction in the ED is (9):

$$\text{Satisfaction}(S) = \text{Perception}(P) - \text{Expectation}(E)$$

According to this model, patients are satisfied when their perceived level of service exceeds their expectations—the larger the difference between their perception and expectation, the higher their level of satisfaction. This model has two distinct benefits when used to analyze ED patient satisfaction. First, it highlights the two essential elements of patient satisfaction, perceptions and expectations, which must be managed in the care process. Second, the variables in the model allow for consideration

of the psychological dimension when considering some of the more objective components of patient satisfaction such as actual wait times, tests performed, and treatments received. A key limitation to applying these concepts to the ED is the relative complexity of health care and the ED when compared to the service industries that have utilized these concepts to improve customer satisfaction. However, for the non-acute ED patients, we believe that these concepts or variations of them can be utilized to improve overall patient satisfaction.

### *Perception*

Perception is defined as the psychological processing by which an individual interprets and understands available sensory information. A formulaic description of perception is as follows:

$$\text{Perception} = (\text{Sensory information}) \\ * (\text{Psychological processing})$$

To improve patients' perceptions of their care during an encounter, ED staff must address both the sensory information a patient receives and their psychological processing of that information.

In the ED, sensory information includes that which is visible to patients and their families as well as the information provided by ED staff about services being provided. Patients use this sensory information to create their perception of the level of service they believe they are receiving. Some sensory information, such as state-of-the-art facilities and investments to decrease actual wait times, comes at significantly high costs. However, improved physician-patient interaction provides sensory information that, though requiring additional time from the physician, may be a more cost-effective way to increase a patient's perception of their physician's dedication, quality of their care, and overall satisfaction. Evidence shows that patient understanding of their ED care is poor, and a strong positive correlation exists between provision of information by doctors and patient satisfaction (13,14). Additionally, evidence shows a strong correlation between physician interpersonal skills and patient satisfaction. Therefore, incremental investments in improving physician communication and interpersonal skills can increase patient understanding of their care and overall satisfaction without changing the actual objective aspects of the care received.

### *Perception and Wait Time*

Wait time is a key component of patient satisfaction, and significant efforts have been made to reduce ED wait

times and increase overall ED efficiency (15). Wait time is highly influenced by a patient's individual psychological processing. Only 25–35% of patients are able to accurately estimate their wait time, with a majority of patients overestimating their wait times (16). As such, two separate individuals experiencing the same wait time will process this experience differently, resulting in two different perceptions of their wait experience. Other studies in non-clinical situations have also highlighted that not all waits are perceived as equal and that interventions can reduce patients' perception of their wait times (17). Given the importance of wait times and the variance in patient estimation of actual wait times, understanding the factors affecting the perception of wait is key to improving patient satisfaction. Research on the psychology of waiting has yielded five key concepts that impact the perception of wait times in the ED setting (9–11):

1. Design of the service environment
2. Early interactions during the wait period
3. Occupied time vs. unoccupied time
4. Uncertain waits vs. known, finite waits
5. Starting a process earlier, regardless of the overall duration of the service interaction

*Design of the service environment.* Design of the service environment is a key concept that can be leveraged to reduce patients' perception of wait times. Features of the service environment such as temperature, lighting, and noise level have all been individually shown to affect the wait experience (10). Deviation of any of these factors from a level of comfort prolongs the perception of wait time. In addition, a spatial layout that is designed to provide a perception of queuing progress and increases the visibility of employees who are attentive and actively providing service reduces the perception of wait. Patients experiencing long waits while they observe employees engaging in idle or non-productive activity are likely to attribute their waits to this behavior and be unsatisfied with their care.

One example of how spatial layout can be changed to impact the perception of wait time and increase satisfaction is provided by Martin (18). Passengers disembarking on flights complained about delays in baggage handling. After investments in reducing baggage transport time were made with no success in reducing complaints, closer analysis showed that the wait for luggage consisted of a 1-minute walk and 7-minute wait. By landing at a terminal further away, the airline was able to invert the waiting period to a 7-minute walk and a 1-minute wait. The change in spatial layout, although not decreasing actual wait time, reduced customers' perceptions of their wait and led to a decrease in customer complaints. This concept can be extrapolated to ED design.

An example of a redesign in the spatial layout to impact patient satisfaction may involve a redesign of the care process. After triage in a typical ED, patients' time can be divided into four segments: wait for ED bed, evaluation by treatment team, wait for test results, and final disposition. This current process places the most unpleasant segment first, which may have significant impact on satisfaction (see below). Changing the spatial layout and care process to rearrange these four time segments may have significant impact on the perception of wait time even though the overall ED care time may be unchanged. Immediate bedding, where patients are evaluated by their treatment teams and then made to wait in "internal" waiting rooms, is an intervention that inverts the care process and should decrease perception of wait times and increase patient satisfaction. This method is being experimented with in some EDs around the country.

Spatial layout redesign can also help address the impact of triage on patient's view of unfairness in the care process. Patients may be asked to wait in rooms with patients of similar acuity, allowing them to be treated on a "first-come, first-served" basis. This spatial redesign can help eliminate the dissatisfaction that results when patients see others who appear less acute being called ahead of them.

Investments in improving the environmental conditions and spatial layout in the ED (e.g., ambient noise level, temperature, and seating arrangements) may have significant impact in improving patient comfort and decreasing perceived wait times.

*Early interactions during the wait period.* During the wait period, early interactions with staff disproportionately affect the perception of the wait time. Negative interactions early in the wait period increase the perception of the overall wait time, whereas positive interactions have the opposite effect. Studies looking at repeat service interactions have shown that earlier interactions weigh more heavily on cumulative satisfaction with the service provider (4). In the ED, registration staff, triage nurses, and greeters are important contacts early in a patient's service interaction. Customer service training to improve these early patient interactions may decrease the perception of wait time. Ensuring satisfaction during initial service interactions may lead to a magnified overall increase in cumulative satisfaction during later visits.

*Occupied time vs. unoccupied time.* Wait time that is occupied with activities feels shorter than unoccupied time. An example of this concept occurs at Disneyland, where a line to a popular attraction features cameras and large interactive screens that allow visitors to see themselves and play games while they wait in line (19). Although waiting for an amusement ride is significantly different

than waiting for emergency care, this concept can be leveraged in the ED for less acute patients. As an example, patients in the ED can complete portions of their medical history, complete surveys relating to their current illness and concerns, learn about their required health maintenance, and find primary care providers while they wait, reducing their unoccupied time and, hence, their perception of wait. Providing other non-medical activities such as magazines, Wi-Fi Internet access, and television can also reduce unoccupied time.

*Uncertain waits vs. known, finite waits.* Uncertain waits are associated with anxiety and have been shown to increase the perception of wait times more than known finite wait times. Certain Departments of Motor Vehicles and other service providers have leveraged this concept by providing their customers information on expected wait times. Although there may be concerns that allowing patients to know their estimated wait times may be a disincentive to seek care, certain EDs have successfully provided patients with estimated wait times with minimal consequences (20). EDs can also make investments in providing patients with estimated wait times regarding certain aspects of their care, such as wait time for diagnostic studies, inpatient beds, and time to disposition. Providers should err on the side of overestimation of wait times to manage patient expectations.

*Starting a process earlier, regardless of the overall duration of the service interaction.* In a service interaction that involves multiple processes, people want to get started as soon as possible. Early initiation of the service process can decrease the customer's perception of wait time even if the overall time of the interaction is unchanged. ED interventions such as early physician-led screening evaluations that allow for initial diagnostic testing to begin while patients wait for ED beds to open and immediate bedding (described above) may allow patients to feel that their arrival has been acknowledged and the care process has begun. Whereas there are limited studies correlating these interventions directly to patient satisfaction, there have been studies correlating these interventions with a proxy of patient satisfaction—the decrease in the number of patients who leave the ED without being seen (21).

### *Expectations*

During a service interaction, customer expectation is defined by the level of service the customer believes they will receive. The two categories of expectations are normative expectations and predictive expectations (22,23). Normative expectations are “perfect world” expectations.

These expectations are relatively stable over time and when they do change, it is thought that they only increase (23). Predictive expectations represent the level of service a customer believes they will receive, and are generally lower than normative expectations. Predictive expectations are set by multiple factors and, unlike normative expectations, can be easily influenced to improve satisfaction (22,23). Several models have been developed to describe and study customers' predictive expectations. Most models focus on expectations set before the service interaction. However, during lengthy service interactions, expectations can change based on sensory input from the providers or indirectly from the service environment (24). Given the limited ability of ED staff to impact expectations set before the initiation of service, the ideal ED model would allow for changing of expectations during the service interaction.

Three types of ED patient expectations can be identified: individual-specific, pre-encounter, and intra-encounter expectations (24). Individual-specific expectations are different for each patient and are set by the individual's personal beliefs of what “good service” entails. These expectations are usually set by multiple factors such as cultural and social backgrounds, and are relatively stable over time (25). Pre-encounter factors are set in two ways. Service providers can define what customers should expect in terms of the level of service they will receive during the interaction. This level of service may be advertised by the service provider to attract clients and, thus, is subject to bias (24). Pre-encounter expectations are also set based on a customer's prior experiences with the service, word-of-mouth, and other information sources such as newspaper articles that provide less biased information (24). Intra-encounter expectations are affected by information either received directly from the service provider or that the client observes during the service interaction (24).

Although ED staff may have limited ability to influence individual-specific expectations, an understanding of patients' pre-encounter expectations may allow for better management of expectations during the care process. For example, an early understanding of a patient's pre-encounter expectations of wait time or desired services allows the ED staff to manage these expectations appropriately. The patient who comes to the ED for a non-emergent test that is not available in the ED and who then waits several hours to learn that the test is not available will likely be unsatisfied with their wait time and ED care. Likewise, a patient who is sent to the ED to “get admitted” and finds out there will be a significant wait for an inpatient hospital bed will likely be unsatisfied with the care they receive in the ED. Identifying patient expectations early in the service interaction and adjusting intra-encounter expectations by clarifying ED capabilities, resources, and wait times may reduce the likelihood

that the patient will leave unsatisfied with the care provided.

Development of processes to identify patient pre-encounter expectations and training of ED staff to appropriately manage these expectations during an encounter is important to increasing patient satisfaction. For example, patients in the waiting room may be asked to write down or verbally communicate their expectations to an assigned ED staff member. This staff member can then relay this information to the care team who can then begin working on resetting this expectation early in the care process. As other health care practitioners and their administrative staff refer a significant number of patients to the ED, training these individuals and providing the needed information so they can appropriately set patient pre-encounter expectations may also improve patient satisfaction. The training can be done via formal training using traditional or web-based techniques. With appropriate training on setting expectations of the care process in the ED, the estimated time to see an ED physician, and estimated time to get an inpatient bed, providers will be able to appropriately set pre-encounter expectations.

#### *Recommendations for Understanding and Improving ED Patient Satisfaction*

Patient satisfaction is affected by patient non-clinical perceptions of their care environment and dependent upon staff effectively managing patient expectations. Table 1 summarizes the essential components and areas of potential investigation in patient satisfaction. In addition, future study on the impact of acuity (from both physician and patient perspective) and symptoms (e.g., pain, vomiting) on perceptions and expectations is needed.

Design of patient satisfaction surveys should allow for measurement of patient normative and predictive expectations to identify the full scope of factors impacting patient satisfaction. Knowing that a patient may identify wait time as a key contributor to their satisfaction level is not enough. Rather, defining their predictive expectation of a wait time of 20 minutes as reasonable better defines the threshold value of satisfaction that the clinician should attempt to meet. If expectations are unrealistic, patient education efforts may be indicated to change predictive expectations.

Care team training should include interpersonal and communication training directed at improving both patient understanding of their care and perceptions of care team dedication. For example, improved communication skills may allow the patient to understand the complexity of their medical history, the tests ordered, specialists involved in their care, and their care process while in the ED. Whereas the physicians may provide the additional information, other members of the care team, as well as

**Table 1. Areas of Improvement and Research in Patient Satisfaction**

Key Components of Satisfaction	Future Research Questions
Perceptions Staff interpersonal and communication skills	Factors that impact as well as interventions to improve interpersonal and communication skills need to be further studied. In addition, alternative communication tools need to be developed and studied.
Wait experience	Current research focuses on reducing actual wait times. Redesigning EDs, leveraging the principles of psychology of wait, and the impact of this on patient perceived wait times and satisfaction need to be studied. Spatial layout, changing the flow of the care process, occupying wait times, and communicating expected wait times all affect the perception of wait and their impact on the wait experience and satisfaction in the ED require further study.
Expectations Assessing expectations	Studies on patient expectations need to differentiate normative, "ideal world" expectations from predictive, "real world" expectations. Interventions to impact patient predictive expectations prior to arrival in the ED require further study.
Adjusting predictive expectations during the clinical care process	Interventions for early identification of patient expectations as well as approaches to manage these expectations and the impact on patient satisfaction require further study.

communication tools, can be designed to increase patient knowledge.

Care process interventions directed at starting the care process earlier, providing patients with finite wait times, and occupying patients' time during the wait period will reduce patients' perceived wait times and may increase overall satisfaction.

Methods of setting patients' predictive expectations, identifying these expectations early in the care process and appropriately adjusting these expectations may increase overall patient satisfaction. The training of other health care providers referring patients to the ED to set appropriate expectations, as well as specific interventions to facilitate early identification and management of patients' expectations, should be studied.

## CONCLUSION

Patient satisfaction is important to overall ED performance and affects financial remuneration, medico-legal risk, and patient compliance. In this article, we describe patient satisfaction as a function of perception and expectation. This approach to patient satisfaction permits the consideration of the psychological processes that may explain why two patients experiencing a very similar care process can have very different levels of satisfaction.

Perception is a function of the sensory information provided to a patient. Interventions that can affect patient perceptions of their care quality include improving patient-physician interactions, providing patients with a greater understanding of their care process, and improving their wait experience. Although reducing actual wait times may require significant resources, we discuss five concepts of the psychology of wait that can be leveraged to reduce the perception of wait and potentially improve satisfaction. The effectiveness of these concepts to decrease the perception of wait has been demonstrated in other service industries and, when combined with other investments in the ED to reduce actual wait times, may have a synergistic effect.

Of equal importance to patient satisfaction is management of patient expectations. Although the ability to change individual-specific and pre-encounter expectations may be limited, an early understanding of a patient's pre-encounter expectations can allow ED staff to manage these expectations during the ED care process. Interventions that aim to identify pre-encounter expectations early in the patient visit and staff training to better manage intra-encounter expectations may improve patient satisfaction at minimal cost.

Applying these concepts operationally and using this framework to guide future investigation will provide a better understanding of the factors contributing to, and modes of improving, patient satisfaction with their ED care.

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## ARTICLE SUMMARY

### **1. Why is this topic important?**

Emergency department (ED) administrators are paying increasing attention to wait times and patient satisfaction and incorporating satisfaction scores into their physician assessments and compensation plans. Although the administrators and physician leadership may have a framework for looking at patient satisfaction, most ED clinicians are not aware of the components of satisfaction.

### **2. What does this review attempt to show?**

This review provides a framework for the ED clinician to analyze patient satisfaction and provides some examples of changes that can be made to increase patient satisfaction. We define patient satisfaction as the difference between perceptions and expectations, describing both the objective (e.g., short wait times, state-of-the-art facilities) and psychological components of satisfaction.

### **3. What are the key findings?**

Management of patient perceptions and expectations are crucial in determining patient satisfaction. Concepts that have been applied in other service industries can be applied in the ED to alter perceptions and manage expectations to improve satisfaction.

### **4. How is patient care impacted?**

Application of these concepts can work synergistically with other investments to increase patient satisfaction.