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Improving patient flow through the implementation of a results pending treatment area

Heather L. Bryant
Gardner-Webb University

Improving Patient Flow Through the Implementation of a Results Pending Treatment Area

by

Heather L. Bryant

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Submitted by:	Approved by:
_____	_____
Heather L. Bryant	Dr. Rebecca Beck-Little
_____	_____
Date	Date

Abstract

The purpose of this research study is to retrospectively evaluate whether the implementation of a Results Pending Treatment Area (RPTA) altered patient flow patterns and therefore reduced patient length of stay (LOS) for ambulatory patients in a Level One Trauma Center Emergency Department. The research is justified because a reduction in the length of stay for patients is shown to decrease overcrowding, ED wait times, loss of revenue, and diversion while improving patient safety and patient satisfaction. The Roy Adaptation Model was the overarching theoretical conceptual framework utilized to support the research, with a more detailed emphasis on Swanson's Theory of Caring. The research shows that much has been done that supports the need to reduce constraints in the Emergency Department as well as to curtail the loss of revenue related to lengthy patient stays. Despite all of this, the implementation of a Results Pending Treatment Area has not been implemented and entered into the current body of literature. The study utilized a retrospective descriptive comparative design, and data analysis was conducted utilizing the independent student's t-test. The results showed a statistically significant ($p = 0.0016$) decrease in total length of stay for patients treated in the Results Pending Treatment Area as compared to those not treated in the Results Pending Treatment Area.

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CHAPTER I

Introduction

The goal of every Emergency Department manager is to provide the safest, most accurate, and most efficient care to each and every customer in a way that is tender, caring, and compassionate. Due to the urgency of patient care, these goals are often difficult to achieve, and yet they are essential for the survival of any Emergency Department aspiring for excellent outcomes and satisfaction scores. Emergency department leadership often seeks solutions to achieve safety, accuracy, and efficiency while promoting tender, caring, and compassionate care.

The "Emergency Department is the hospital's front door into the community" (Mayer & Jensen, 2009, p. 149). It is therefore essential that the Emergency Department (ED) function to provide the safest, most efficient, and most effective care while providing service that keeps bringing customers back. "Key measures of ED performance are customer satisfaction, clinical and operational quality, financial performance, and people management. At the nexus of all of these issues is patient flow" (Jensen & Crane, 2008, p. 105).

Problem Statement

Despite how vital it is for Emergency Departments to function in a way that ensures excellent patient flow, the average ED struggles in this area. Efficient patient flow is often seen as an unattainable dream for many ED managers who struggle against the norm with little improvement. Despite the variation of care provided in the Emergency Department, it becomes imperative that leadership take the time to understand patient flow problems within their own ED's and then to correct those

problems in a way that permanent change occurs. The results of this research study have the potential to improve the ED patient's length of stay through improved patient flow throughout the Emergency Department.

Justification of the Research

There are numerous reasons why patient flow is such a vital topic in emergency medicine such as overcrowding, lengthy ED wait times, loss of revenue, decreased patient safety and patient satisfaction, and diversion. "Prolonged emergency department length of stay is linked to adverse outcomes, decreased patient satisfaction, and ED crowding." (Wiler et al.,, 2012, p. 1). The large number of patients accommodated by the ED often results in overcrowding. "Overcrowding is at the top of the list, with one recent study showing that large metropolitan EDs (serving more than 50,000 patients per year) bear the greatest burden. Representing just 17.7 % of all Emergency Departments in the nation, these EDs accounted for 44 % of all ED visits in 2007" (Baker, 2009, p. 17). With an increase in the number of patient visits, and no improvement in patient flow, ED medicine can become dangerous very quickly.

"In the United States, EDs experienced a 20 % increase in patient visits over the past decade. Not surprisingly, ED waiting times have also increased. According to the Centers for Disease Control and Prevention, the average wait time for non-urgent visits increased between 1997 and 2000 by 33 %, from 51 minutes to 68 minutes" (Institute for Healthcare Improvement, 2003, p. 2). And of course, wait times impact a number of factors including safety, patient satisfaction, and lost revenue. "People are not timid if they feel their ED wait was too long or they feel ignored or they didn't understand what they heard-they will share this with the community" (Baker, 2009, p. i).

"Overcrowding in hospital emergency departments and extended wait times are a serious problem." (Knapman & Bonner, 2010, p. 310). It is a well-known fact that waiting long periods of time decreases satisfaction, and in healthcare, can impact the safety of the patients who do have to wait. When supporting the need for decreasing length of stay in the emergency department, the concept of waiting therefore must be addressed. Patients do not like to wait, especially when they are sick and feel as though they should be attended to immediately. The psychology of waiting as defined by Mayer and Jensen (2009) provides eight principles for waiting:

1. Occupied time beats unoccupied time.
2. Being in-process beats being preprocess.
3. Anxiety is bad.
4. Limited certainty beats uncertainty.
5. Explained situations beat unexplained ones.
6. Equitable treatment beats unfair treatment.
7. The more valuable the service is, the more tolerable the wait is.
8. Group waits beat solo waits

There is a "mismatch between patient concerns and emergency staff perceptions, particularly with regards to waiting times" (Chan, Arendts, & Wong, 2008, p. 237). It is therefore imperative that we understand the patient's perspective of their wait and not assume as healthcare providers that we know exactly how they feel with each varying level of a wait.

Loss of revenue is directly related to poor patient flow also. Baker (2009) found decreased wait times resulted in an increased number of ED patients and increased payor

mix. Efficient patient flow also has a direct effect on earned revenue. "In simple terms, improved patient flow leads to increased capacity, increased ED revenue, increased surgical volume, and increased hospital revenue" (Mayer & Jensen, 2009, p. 110). According to Baker (2009), a 60 minute reduced overall turnaround time in an ED with 36,000 annual visits allows an additional 30 patients per day. This has the potential to increase the ED revenue by $7,500 per day or over $2.5 million per year.

Also, patient safety declines as ED delays increase. (Mayer & Jensen, 2009) With "Centers for Medicare & Medicaid Services' (CMS) refusal to pay for serious preventable adverse events, hospitals can no longer afford patient falls or infections in the ED or inpatient units. Baker (2009) emphasizes that resources are scarce and therefore efficiency is key. The financial losses associated with poor patient flow is significant and can be motivation alone for the need for improvement.

When considering safety and lost revenue, diversion is another reason to improve patient flow. Jensen and Kirkpatrick (2010) found two-thirds of the 2,000 hospitals surveyed diverted ambulances to other hospitals at some point during the fiscal year 2001. One-third of the hospitals boarded about 75% of their patients in the ED for two or more hours in the previous year, while three-fourths of hospitals experienced some form of boarding. Another report showed that "50,000 ambulances were diverted in 2007, with potentially catastrophic treatment delays for those patients" (Baker, 2009, p. 17).

Research has found a significant reduction in patient satisfaction when patient flow is poor. "Lower patient satisfaction correlates with higher wait times" (Baker, 2009, p.18). Patient satisfaction has a significant impact on other performance measures as well. "When your initiatives work to improve flow, you improve throughput time, and

when you do, the result is more satisfied patients. Improved patient satisfaction has two results: The patient who is happy with the service is more likely to return to the hospital again, and is more likely to recommend the hospital to friends, relatives, and associates. Conversely, poor service is an opportunity cost: the loss of repeat patronage and the loss of prospective business from others who hear from dissatisfied patients" (Mayer & Jensen, 2009, p. 117).

When such major topics such as overcrowding, ED wait times, financial loss, safety, patient satisfaction, and diversion all so closely connected to patient flow, it becomes imperative that patient flow in the Emergency Department become a priority for ED leadership (Johnson, Sensei, & Capasso, 2012). Research is therefore needed to improve patient flow through workable changes and solutions that can be implemented in a variety of different Emergency Department settings.

Purpose

The purpose of this research study is to retrospectively evaluate whether the implementation of a Results Pending Treatment Area (RPTA) altered patient length of stay (LOS) for ambulatory patients in a Level One Trauma Center Emergency Department.

Theoretical/Conceptual Framework

The Roy Adaptation Model (RAM) is the overarching conceptual model guiding this research. "The RAM is based on the premise that a human being is both a psychological and biological being. Consequently, their external environment has a large impact on their wellbeing because they are always interacting with it. In light of this, a person's ability to cope can be impeded by some external stressors. This is the point at

which nursing interventions are necessary. To promote overall health, nurses should assist patients to deal with these stressors (Miller, 2010, p. 1). Patient flow challenges in the ED subject sick patients to long wait times and delays in provision of care. This delay adds to the already overwhelming amount of external stressors patients receive from their external environment. The Emergency Department is considered the patient's external environment, and all factors associated with ED patient care are considered external stressors according to the RAM. Nursing interventions to reduce these external stressors as much as possible are required to improve adaptation and patient outcomes. The establishment of a RPTA is considered a nursing intervention according to the RAM.

Kristen M. Swanson's Theory of Caring, is the theoretical basis for this study which is utilized under the Roy adaptation model's overarching conceptual framework. Swanson's states that "all-inclusive care in a complex environment embraces balance of caring (for self and the one cared for), attaching (to others and roles), managing responsibilities (assigned by self, others, and society), and avoiding bad outcomes" (Tomey & Alligood, 2006, p. 764). This theory can be applied to the patient benefits achieved by improved patient flow in the ED. Swanson's theory emphasizes that the goal of nursing is to promote the well-being of others. Improved patient flow through establishment of a RPTA allows increased quality of patient care resulting in positive outcomes and improved patient satisfaction.

Swanson's theoretical framework applies well within scope of change for emergency department leadership. According to Swanson, the first step is Maintaining Belief, or "the philosophical attitudes towards persons (in general) and the designated client (in specific)" (Tomey & Alligood, 2006, p. 768). Improvements in patient flow

following implementation of the RPTA will improve satisfaction for both the patient and the staff members involved. The second step in Swanson's theory is Knowing; which involves the statistical presentation of information. The results of this study will provide statistical information to determine if the establishment of the RPTA will improve the patient flow in the Emergency Department. The next step, according to Swanson, is Being With, which involves open communication between the nurse and patient. This is where the change from an exam room to a RPTA has the potential to improve customer communication and customer service. Swanson's final two steps involve Doing For and Enabling, the therapeutic action that is decided upon by the nurse. In this study, the goal of the therapeutic action will be to decrease overall length of stay. Finally, client well-being is the intended outcome and ensures appropriate caring (Tomey & Alligood, 2006).

The conceptual, theoretical, empirical model that will be used integrates Roy's Adaptation Model with Swanson's Theory of Caring to apply to improving flow and length of stay in the emergency department. In this study, the environmental stimuli will be considered to be the length of the patients' wait, with the understanding that for a sick patient, a long wait time is a negative stimuli. The intervention to reduce the length of stay will reflect in improved caring for the patient. This relationship is diagramed below in Figure 1(Fawcett, 2009).

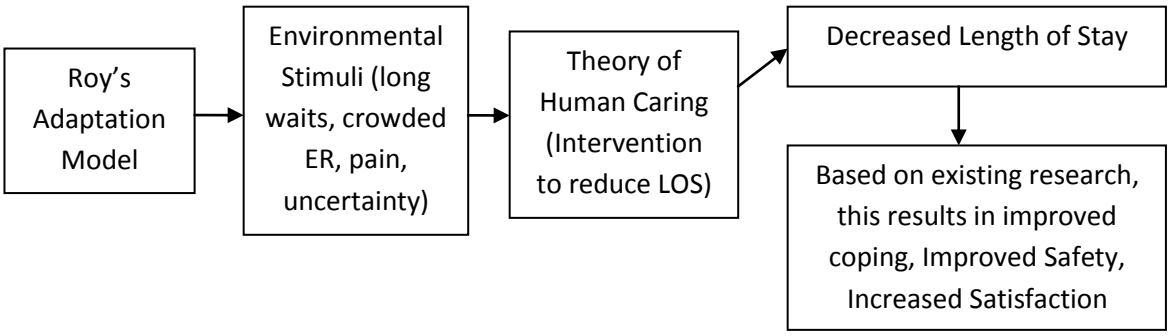

Figure 1. Roy's Adaptation Model

Research Question and Hypothesis

The research question to be investigated is: Do patients treated in the Intermediate Care area of the emergency department, who process through the Results Pending Treatment Area, experience a decreased length of stay as compared to patients treated in the Intermediate Care area of the emergency department who do not process through the Results Pending Treatment Area?

Definition of Terms

The terms Length of Stay (LOS), Results Pending Treatment Area (RPTA), Patient Flow, and Bottleneck will be defined to ensure understandability throughout the MSN thesis.

Length of Stay can be defined as the amount of time one patient is present in the Emergency Department. The time begins when they arrive in the ED and provide their name, birthday, and social security number, and are therefore entered as present into the computerized documentation system. The final and total time is calculated when they leave the department and are therefore removed from the computerized documentation system.

The Results Pending Treatment Area (RPTA) is a location where patients who have already been examined by an physician wait in a vertical position (in a chair or a recliner) while they receive treatments or wait on test results. A patient who arrives in a vertical position, and therefore is well enough to remain vertical, should remain thus in order to reduce total LOS (Mayer & Jensen, 2009, p. 154, 166).

Patient flow is "the movement of patients through the network of queues and service transitions that characterize modern healthcare" (Mayer & Jensen, 2009, p. 9). It is also "the process of adding value and eliminating waste during the course of our patients' journey through the healthcare system" (Mayer & Jensen, 2009, p. 9). The same definition can be stated differently to define patient flow as "the movement of patients from the time they enter the department until the time they are released or are admitted to the hospital, and if they are admitted, then until they time they are discharged from the ED to the floor" (Jensen & Kirkpatrick, 2010, p. 6). In other words, a statistical way to picture patient flow would be length of stay (LOS).

A bottleneck is "any resource whose capacity is equal to or less than the demand placed upon it" (Mayer & Jensen, 2009, p. 42). This becomes a vital concept when considering the many different reasons for poor patient flow, and is an important term to understand when considering the rationale for the research.

Summary

"EDs are busy places and only getting busier, and when patients, information, and materials do not flow through the ED in a timely and efficient way, patient and staff satisfaction, and hospital bottom lines can all be negatively affected" (Jensen & Kirkpatrick, 2010, p. xiii). It therefore becomes vital that research is done to prove that

certain changes can have a positive impact on patient flow. The purpose of this retrospective research study therefore seeks to determine the effect of a Results Pending Treatment Area on total patient length of stay in a Level One Trauma Center Emergency Department while utilizing current research and the Roy Adaptation Model as a nursing theoretical framework.

CHAPTER II

Literature Review

This literature review will focus on the research related to patient flow in the ED while also discussing some relevant existing research that attempted to improve patient flow through a change in patient process. “As the point of entry for the largest number of patients-the hospital’s front door-the ED is a critical part of the healthcare system and a logical place to begin working on improving flow” (Mayer & Jensen, 2009, p. 151). When considering that the research must start in the ED, we therefore also acknowledge that “75 percent of patients are ambulatory and present to the triage area, with the remaining 25 percent coming by ambulance or helicopter. Those who present to the triage area are generally less acutely ill or injured than those who came by ambulance” (Mayer & Jensen, 2009, p. 151). There are currently no peer-reviewed and published research articles that involve turning an area of an Emergency Department into a Results Pending Treatment Area. This literature review will therefore be divided into current peer-reviewed literature related to the statement of purpose, and reports of interventions in the clinical setting.

The EBSCO Host research tool was the primary source utilized to conduct the research. Databases included Medline, Cumulative Index to Nursing and Allied Health (CINAHL), Health Business Elite, and the Cochrane Database of Systematic Reviews were searched. Google Scholar and PubMed were also utilized to conduct searches. Search terms used included Emergency Department, Length of Stay, Patient Flow, and Results Pending Discharge.

Literature Related to Statement of Purpose

Although limited, some research has been conducted that supports the concept that improved patient flow is a necessary focus for Emergency Department leadership. Articles that discuss the theory of constraints, the business case for needed change, and efforts to decrease length of stay will be examined.

The ability of any emergency department to effectively and efficiently treat patients is limited by their constraints. Mayer and Jensen (2009) identified two key points about constraints in that they "limit performance and to improve performance." Correcting constraints that prevents good patient flow in a department, such as an ED, should be a priority. A research study by Martin, Champion, Kinsman, and Masman (2011) focused on identifying bottlenecks within an emergency department that contributed to over-crowding. They found that their "greatest source of delay in patient flow was the waiting times from a bed request to exit from the ED for hospital admission. This constraint represented 61% of the time that these patients occupied ED cubicles." (Martin et al., 2011, p. 75). Despite this bottleneck with admissions, admission rates are only a fraction of the total patient population. This study utilized a Unified Modeling Language model to examine the patient journey through the system. The researchers examined both the quantitative and qualitative aspects of service delivery and patient treatment data, and used their results to better plan needed hospital services.

The financial impact of poor patient flow is a major reason for needed improvement. One major area of revenue loss related to patient flow is that of diversion. Most large hospitals spend a considerable amount of time on diversion because of overcrowding and the simple fact that there is no more room for additional patients.

Diversion can be dangerous for both the patients and the hospital. A research study conducted by Kolker (2008) at the Children's Hospital of Wisconsin in Milwaukee, a large 450+ bed primary teaching hospital with a level one trauma center. The study utilized an "event simulation methodology to establish a quantitative relationship between Emergency Department (ED) performance characteristics, such as percent of time on ambulance diversion and the number of patients in queue in the waiting room, and the upper limits of patient length of stay. The total sample included 8,411 patients treated in the ED in the months of January and February, 2007. The study determined that ED diversion could be less than or equal to 0.5% if they could ensure that all the patients who were discharged home from the ED would stay no more than five hours, and if admitted patients could stay no more than six hours (Kolker, 2008). Although setting limits on the length of stay for both discharged patients and admitted patients, the impact of decreasing length of stay for the discharged patients must be significant as well.

The need to decrease length of stay for emergency department patients is not a new concept. The Virginia Mason Medical Center in Seattle, Washington improved their patient flow and increased their capacity to tend to more acute care patients through the implementation of an "18-bed Accelerated Care Environment (PACE), a brand new unit that is designed to help the ED and other areas of the hospital operate more efficiently, while also connecting patients with the care they need quickly" (Gillespie & Mow, 2012, p. 17). The PACE unit functions like a rapid treatment area who may be more in depth clinically than would traditionally go to a fast track area. Patients are seen in the ED and sent to the PACE unit where they continue their treatment for anywhere from four to forty-eight hours. After that, if they need further treatment they are admitted. Virginia

Mason Medical Center has seen this new unit benefit both in the short term and the long term. The ED feels as though they are better equipped to see just the acute patients, and transfer those stable and waiting on treatment to the PACE unit. The hospitalist team likes it because their admitted patients are centralized in one area. Overall ED patient flow has improved, and the waiting room rarely has any patients waiting to be seen (Gillespie & Mow, 2012). The PACE unit was viewed as a success for improved patient flow.

Emergency departments need improved patient flow in other nations beyond the United States as well. Considine, Dropman, Kelly, and Winter (2008) explored the results of implementation of a fast track area in their Emergency Department to decrease their patient length of stay. The setting for the study was a 262 bed, metropolitan teaching hospital in Melbourne, Australia. The researchers utilized a pair-matched, case-control design to compare the length of stay for each patient treated in the fast track area with someone treated in the general ED. Data was collected for a three month period, January through March, from 1,296 patients. The study found that "fast-track patients had a significantly higher incidence of discharge within 2 hours and 4 hours" when compared to discharged patients treated in the general ED (Considine et al., 2008, p. 815). Although positive in its results, this study did find that the implementation of a fast track area did not significantly decrease the EDs overall wait times, or the average length of stay for patients not treated in the fast track area.

A literature review from the Cochrane database conducted on strategies to reduce emergency department overcrowding in 2012 on research studies since 2006 found 23 studies that attempted to reduce ED overcrowding. Many of these studies addressed

patient flow, attempts to connect patients with primary care providers, and educating patient about the misuse of the ED. These studies resulted in little added value from their efforts and insignificant change when calculating effective change (Guo, 2012). Many of the articles did address ED strategies to improve patient flow and therefore reduce crowding. Interventions varied and included attempts such as staffing and reorganizing, adding ED acute care units, adding a fast track, and change access to different diagnostic services. Results varied among the studies but showed that many had promise. "Strategies aimed at improving ED throughput included extensive structural and staff reorganization of the ED, change in provider staffing based on a queuing analysis, implementation of a multidisciplinary care coordination team, addition of a faculty member to ED triage, provision of an on-site emergency physician on the night shift, addition of an acute care unit staffed by ED personnel, implementation of point-of-care tests in the ED, and triage nurse's initiation of appropriate diagnostic tests" (GUO 2012, p. 3). Although individual studies looked promising, there was little consistency among the group and a lack of specific and consistent terminology throughout all of the studies. Guo (2012) concluded there is much area for improvement and for EDs to start to utilize the research and work together for improved overall change.

Reports of Interventions in the Clinical Setting

Due to limitations in the research, a number of published articles discussing changes made in Emergency Departments that weren't full research studies were utilized to examine the business case for a RPTA, improving customer satisfaction, and reducing overall length of stay. The case for going vertical and for the implementation of the Results Pending Treatment Area is then discussed.

One of the most compelling reasons for managers to decrease length of stay is the financial ramifications of making such a change. Brooks (2012) utilized an emergency department at the Cambridge Health Alliance to show how some major ED changes significantly decreased wait times while increasing total patient volumes by 25%. Many of their changes took the current system and improved upon it to make patient flow a more fluid process that doesn't involve the duplication of work and that eliminated many pre-existing bottlenecks. This stream lined the process that a patient went through to receive treatment while helping the patient to feel as though they were a well thought out part of a very organized system. An increase of patient volumes of 25% means a huge increase to that EDs revenue stream. This research study showed how focusing on the bottlenecks and being willing to change processes that have been in place and unchanged for years can result in drastic improvement (Brooks, 2012).

An indirect cost of poor patient flow involves staff satisfaction, both nursing and physician. When the staff members providing the care feel overwhelmed and burdened by the environment created from poor patient flow, staff turnover rates will be very high. The cost of recruitment and orientation, as well as the cost of orientation and working short while understaffed, all result in significant costs. Excellent patient flow motivates high performing ED staff, and in turn keeps them from seeking alternate employment (Mayer & Jensen, 2009).

Poor customer satisfaction also impacts an Emergency Department negatively. A change project conducted at the Cambridge Health Alliance highlighted how decreasing length of stay can improve patient satisfaction scores. These three EDs "were in the lowest docile in Massachusetts, and now they are consistently in the top quartile" (Spath,

2011, p. 35). They made major changes to the ED which decreased length of stay. They accomplished these results through a number of changes. They worked directly to reduce total patient length of stay for both discharged and admitted patients. For admitted patients, this meant a hospital wide initiative to keep things moving once the decision to admit was made. Also, they implemented a "patient partner" who greets all patients as they arrive and advocates for the patients throughout their stay. They also made a strong stance against diversion, stating that they would never go on diversion, and would work to ensure they would never have to (Spath, 2011). These changes directly impacted their patient satisfaction scores and now they are known as a desirable ED to visit by their community.

Improving patient flow through decreasing length of stay is another area of focus for many Emergency Departments. Mercy Hospital in Springfield, MO, worked to improve patient flow by creating a new position called the ED flow facilitator. This person floated throughout the ED to determine where the next available bed was and which patient was in line for it. They did not take a patient load, but instead worked to keep patients moving however they needed to, by helping with admissions, discharges, or even helping housekeeping when needed. The study monitored input and output for each zone of the ED to keep patient loads balanced and keep patient flow moving. Since implementation of this new role, Mercy Hospital saw "the left without being seen rate decline to the 3% to 5% range, and there were also slight declines in the length-of-stay and door-to-bed placement times" (Reynolds & Shockley, 2012, p 105). With this ED treating over 95,000 patients that year, the numerical change is significant.

As emergency department patient flow continues to be a problem across the nation, Cincinnati Children's Hospital Medical Center took a closer look at their processes to improve patient flow and were able to drop their door to doctor evaluation time by 16 minutes. They did a number of things to accomplish this, such as removing nonvalue-added steps and eliminating redundancy in daily activities. One change included having a nurse at the front of the ED as the very first person the patients encountered. This provided additional safety if the patients presented were acutely ill, while also allowing a more rapid and accurate triage. Interestingly, "length of stay holds steady across the past three years, which probably makes sense since the triage flow processes that we changed are very early in the patient encounter, and many other things would affect overall length of stay" (Kissling & Shaw, 2010, p. 5). Although their changes improved the speed in which their patients were seen by the physicians, overall length of stay still needs work. Patient flow was improved, but not significantly enough to impact the overall movement of their patients.

When considering a change that will decrease length of stay, and the fact that research doesn't support this effort anywhere else in the research literature, it is important to understand why a vertical Results Pending Treatment Area is a solid concept. When considering bed management in an ED, one must acknowledge that a stretcher in the ED is a rate limiting factor. Without additional beds, additional patients cannot be seen and treated in a traditional model. This new concept of keeping patients vertical challenges that. "Patients should be in beds only if medically necessary, and only for as long as medically necessary. The challenge-and opportunity-is finding and identifying which patients do and do not need beds, and determining, if a patient does not need a bed, for

what purpose and for how long" (Jensen & Crane, 2008, p. 105). Patients who do need beds tend to be sicker, they value patient and detailed care that stabilizes their illness, and helps them in their road to recovery. Patients who don't need beds tend to arrive via triage, tend to be younger and healthier, and they value speed, service, and efficiency. In order to provide that efficiency, they must remain vertical. "For horizontal patients, real estate matters, for vertical patients, speed matters." (Mayer & Jensen, 2009, p. 155). When considering this drastic of a change and allowing room for learning and growth, the potential for a Results Pending Treatment Area that allows patients to remain vertical has great possibilities.

Strengths and Limitations of Literature

One of the overwhelming strengths of the literature is that the need for improved patient flow is obvious. There are numerous articles being published each year that discuss the need to decrease crowding and patient length of stay for the betterment of both the patients and the staff caring for those patients. This provides the research with purpose and strength. Another strength is that there are numerous emergency departments across the United States and the developed world that are implementing new strategies to reduce length of stay and they are writing about it. This provides a great resource for information and a wealth of knowledge can be gleaned from the volume of information being published on this topic. A final strength is that the opportunities for this research are endless. Were a Results Pending Treatment Area to prove a huge success, hundreds of comparable emergency departments could benefit from this research and dissemination of the results would be vitally important.

The major limitation of the research is that there hasn't been a single published research article on the implementation of a Results Pending Treatment Area that treats patients in the vertical setting. Although published works by the originators of the concept emphasize its importance and effectiveness, there is no research being produced by the hospitals that have thus far implemented the change and benefited from it. This limits the ability of other emergency departments to benefit from the potential positive results of this change. Another limitation of the literature was that the majority of the articles were not conducted as true research studies. Often managers shared the changes they implemented, why they made those changes, and the preliminary results. This lessens the potential that the results are both valid and reliable, and limits the reproducibility of that change for other EDs wanting to implement similar concepts.

Summary

In order to positively impact improved patient flow in the emergency department, change is essential. "Because many throughput problems experienced by EDs are not caused by EDs, those managers who find themselves operating in a vacuum have little chance for success" (Flow Strategies, 2010, p. 33). It is imperative then, that as ED managers we look outside our immediate circle to determine some unique ways that may finally decrease length of stay and improve overall patient flow. In doing so, we considered the theory of constraints, the business case for improved patient flow, the importance of customer satisfaction, other methods of decreasing length of stay, and the case for going vertical. In all of these we have found a solid case for making significant change in an attempt to positively impact patient flow. "To quote or paraphrase Einstein, we can't solve problems by using the same kind of thinking we used when we created

them." (Jensen & Crane, 2008, p. 1085). It's time to think outside of the box of traditional emergency department treatment methods and make changes that may drastically affect the way we move patients through the ED.

CHAPTER III

Methodology

The purpose of this research is to retrospectively evaluate whether the implementation of a Results Pending Treatment Area (RPTA) for ambulatory patients in a Level One Trauma Center Emergency Department decreased the total patient length of stay (LOS). This research study evaluates a major change in the delivery of patient care aimed at improvements in emergency department patient flow.

In this chapter, the methods for implementation, the hospital setting, the research sample, and the research design will be explained in detail. Also, the protection of human subjects, instruments used, data collection procedures, and methods of data analysis will be discussed.

Implementation

This descriptive retrospective study will explore the results of a change in practice previously implemented at the research hospital. The change involved taking a patient treatment room in one of the areas of the ED and converting it into a Results Pending Treatment Area. This area consisted of the largest room in Intermediate Care, the area of the ED where there majority of the patients are those who aren't critically ill upon arrival but will likely require a full workup for their symptoms. To convert the room into a Results Pending Treatment Area, the stretcher was removed and six medical recliner chairs added. Room divider screens were placed to allow some privacy, and a chair was placed next to each recliner to allow for one visitor per patient. Also, a cabinet in the room was converted into a desk for use as a workstation for the Registered Nurse

assigned to that room for the day. The desk was outfitted with a computer, a phone, and a place for charts and necessary paperwork.

In preparing for the implementation date, a large amount of time was spent determining the details of how the room would function. It was determined that the remainder of the rooms in Intermediate care would be reassigned to the four remaining Registered Nurses assigned to that area of the emergency department. This allowed a better use of the area, Intermediate Care, as a whole, and accounted for the additional Registered Nurse assigned to run the Results Pending Treatment Area. Also, in looking at the peak volume times in the emergency department, it was determined that the Results Pending Treatment Area would be open each day from 1pm to 1am. This would allow improved patient flow during the busiest times of the day based on patient volumes.

Staff was prepared for the change through direct one hour courses for those selected to work in the RPTA, and those who would function as the Intermediate Care area charge nurse for the day. All other staff was given information at daily shift change meetings. Also, on the day the RPTA opened, management was present for nearly the entire day to educate and help with the beginning of the change. After the initial day, those involved in the change met weekly to discuss feedback received from the staff and occasionally patients about their experience and the use of the room. Small changes were made to better meet staff and patient needs when appropriate.

The data collected for this research was part of normal operations in the ED to measure patient length of stay. Overall the change was viewed by the staff as a positive one, and the RPTA became an accepted part of daily operations in the ED. “Success in managing change depends fundamentally on a positive, proactive, and evolving

relationship with each partner in the clinical provision of care" (Jensen & Kirkpatrick, 2010, p. 9). Encouragement and reinforcement was provided for all nursing and medical ED staff throughout the process.

Setting

The research study took place in a large teaching hospital in the Southeastern United States. The research hospital is a 710 bed hospital in the center of a major metropolitan area. The hospital is the center of a major health system for the organization that services the entire county through satellite hospitals and a network of smaller healthcare services. The Emergency Department is a level one trauma center that sees about 95,000 patient visits annually. The ED has 89 acute care beds, 53 of which service the adult patient population.

When considering the setting for the RPTA, it was necessary to place this room in Intermediate Care, which is the area in the ED that has the longest turnaround times and the most severe bottleneck effect. Annually, 63% of the patients that arrive to the ED are classified by the Emergency Severity Index as a level 3. The majority of Level 3 patients are treated in Intermediate Care. Intermediate Care is a twenty bed treatment area that has an unlimited number of places to place hallway patients. The creation of the RPTA removed two of these twenty beds and created six recliner locations for patients to continue their treatment. The extra capacity allowed for more flexibility of patient movement.

Nearly 75 % of patients presenting to the study ED would be appropriate to be placed in the RPTA and could therefore benefit from this offering of decreased length of stay. In the last year only 14% of the ED patients that came to the study ED were

admitted. The majority of the remaining patients was discharged home, and often would have been a perfect fit for the RPTA.

Sample

The study sample consisted of those patients who came to the ED and who were appropriate for Intermediate Care and the RPTA for a three month period beginning on June 14, 2012. This was a process change in normal daily operations for the department and was not a pilot or an option for patients. Patients who were placed in Intermediate Care either from the triage area or from Emergency Medical Services who were healthy enough to receive treatment in a recliner instead of on a stretcher were candidates for the RPTA. These patients were placed in a private room for their exam and then moved to the RPTA to wait on procedures or test results.

Design

The focus on the study is to obtain data from a change that has already occurred and to determine if those patients who were treated in the Results Pending Treatment Area experienced a reduced length of stay when compared to those patients who were treated in the remainder of Intermediate Care with the exception of the psychiatric population. The study design will therefore be a retrospective descriptive comparative study.

Protection of Human Subjects

As this study retrospectively analyzes a non-biased change already put into place based on patient symptoms and presentation, consent for participation is not necessary. No persons were excluded based on gender or race. The study examined aggregate data that does not include specific patient identifiers and therefore all patient data will remain

confidential. The data that were to be collected will involve what room in Intermediate Care the patients were in and their length of stay. Information such as their demographics and their diagnosis will not be needed and therefore will remain protected and confidential according to hospital policy. The institutional review board for both the researcher's university and the hospital participating in the research was obtained to ensure protection as well.

Data Collection Procedure and Instruments

Data currently exists for this study and is in the nursing documentation system used daily is the ED participating in the study. Ibex, the documentation program allows reports to be run that will compare average length of stay specific to the location of a patient. For the purposes of the study, the data from patients seen in the ED for the first three months after implementation of the Results Pending Treatment Area. There were no specific or unique tools used to collect the data beyond Ibex, the patient documentation system that has been in place in the ED for the past eight years.

Data Analysis

Data analysis compared the total length of stay for those patients seen in the Results Pending Treatment Area for the course of three months and discharged home with those patients seen in the remainder of Intermediate Care during the same time period, and discharged home. Psychiatric patients were excluded from the study because the length of stay for these patients is unique to their medical needs and they are not candidates for the Results Pending Treatment Area, despite being treated in Intermediate Care and being ambulatory. The length of stay in minutes was compared between the two groups, patients utilizing the RPTA and those not utilizing the RPTA, using the Student's

T-Test for independent groups. A significance level of 0.05 was used as indicative of a statistically significant difference between the two groups.

Summary

In order to make a significant change in total length of stay in the emergency department, change is essential. With limited budgets and resources, increasing the size and staff in an ED isn't the only way that one can reduce patient length of stay. In thinking outside of the box and implementing a Results Pending Treatment Area, the potential to decrease length of stay without major structural changes may be realized. "The reality is that reducing wait times is most impacted by how efficient you are at turning over beds, regardless of the size of your ED" (Baker, 2009, p. 37). In putting these methods into practice, the intent is to see that process changes can positively impact patient length of stay in a busy Level One Trauma Center.

CHAPTER IV

Results

A change process was implemented in a Level 1 Trauma Center Emergency Department in order to decrease overall patient length of stay for discharged patients. This was done through the implementation of a Results Pending Treatment Area (RPTA). Retrospectively, data was collected for a three month period after implementation in order to obtain results on whether the Results Pending Treatment Area was effective in decreasing patient length of stay. Data was collected from June 14th, 2012 through September 14th, 2012.

Sample Characteristics

The sample consisted of all ambulatory patients who presented to the Emergency Department and discharged home. The final sample size for data analysis was 101 patients, 24 patients treated in the RPTA and 77 treated in Intermediate Care. The following table illustrates the average length of stay for each group.

Table 1

Average Length of Stay for the Two Groups

Average Length of Stay					
Group	N	M	SD	Minimum	Maximum
RPTA	24	336.0	29.0133	268.8	394.2
Intermediate Care	77	367.2	65.9324	286.2	651.0

Major Findings

The research question being investigated is; Do patients treated in the Intermediate Care area of the Emergency Department, who process through the Results Pending Treatment Area, experience a decreased length of stay as compared to patients treated in the Intermediate Care area of the Emergency Department who do not process through the Results Pending Treatment Area? In order to utilize this data to obtain results, the length of stay in minutes was compared between the two groups using the Student's t-test for independent groups. A p-value of <0.05 was used as indicative of a statistically significant difference between the two groups.

The data was analyzed utilizing SAS, version 9.2, to determine the difference between the two independent groups. An independent samples t test comparing the length of stay in minutes for the two groups, those utilizing the RPTA and those utilizing the Intermediate care area, was statistically significant, $t(87.795) = -3.26$, $p = 0.0016$. The average length of stay for patients treated in the RPTA was 31 minutes shorter than that of patients treated in Intermediate care, a statistically significant difference.

CHAPTER V

Discussion

The purpose of this research study was to retrospectively evaluate whether the implementation of a Results Pending Treatment Area (RPTA) altered patient flow patterns, and therefore decreased patient length of stay (LOS) for ambulatory patients in a Level One Trauma Center Emergency Department. The results showed that between two independent groups, those in the group that were treated in the RPTA experienced a statistically significant reduction in total Length of Stay when compared to the group that were not treated in the RPTA.

Interpretation of Findings

The results showed that patients treated in the RPTA experience, on average a reduction in total length of stay of about 31 minutes. This difference is statistically significant, and therefore is a difference large enough to have a bearing on the many factors discussed throughout the research study when considering the benefits of reduced length of stay. This means that for those patients who benefit from this reduction, and based on the research presented already, there is an opportunity for decreased patient wait times, increased patient and staff safety and patient outcomes, and improved patient satisfaction. There is also the likelihood of a decrease in the amount of time on diversion, and an increase in overall potential revenue for the Emergency Department.

With this study being the first to attempt this change in the published research literature, it is hard to compare the positive results with other similar Emergency Departments. What is known is that the desire to decrease total length of stay is ever prevalent in the research, and a reduction of over 30 minutes is desirable among

Emergency Department leaders. When considering the impact of a 30 minute reduction, one must consider the reduced work load and increased efficiency that reduction in time will afford the staff and the department. This impact truly is significant.

Application to Theoretical/Conceptual Framework

The Roy Adaptation Model (RAM) was the overarching theoretical conceptual framework utilized for this study, with a more specific analysis of Swanson's Theory of Caring as it related to patients being treated in the Emergency Department. Overall, the external environment of any Emergency Department patient can be extremely stressful and it is the caring thing to do for nurses to reduce that stress by providing a warm, compassionate, and efficient visit for each and every patient. The results of this study showing that the implementation of a Results Pending Treatment Area does indeed significantly reduce overall patient length of stay, supports the idea that the RPTA is indeed a caring change, and that its implementation works to promote overall health by reducing stress for Emergency Department patients.

Limitations

There were three major limitations of this study. The first is that although obtaining good results, data that was collected over a greater period of time may have proven even greater results. Being a retrospective study, the data did exist, but was not utilized to keep the numbers more manageable. Also, staffing for the RPTA became less reliable after the first three months of implantation, and if there wasn't a nurse to staff the area, it wasn't opened and therefore was left unutilized. Therefore further data collection may not result in enough usage of the area to show significance. This would indicate that

a rate limiting factor for the success of a RPTA would be adequate staffing in the Emergency Department to begin with.

Another limitation was the presentation of the data. A best case scenario for data analysis would have been to compare the total length of stay for group 1 and group 2 for each and every qualifying patient treated. This would have resulted in a much larger N value, and a cleaner, more concise data analysis. This was not possible due to the limitations of the program in which the data was collected.

The third and final major limitation of the study was that there were no other published research studies analyzing the use and effectiveness of a RPTA. Had there been other published studies, this information could have provided more direction, a better framework, or an informative comparison for results.

Implications for Nursing

This research study has exciting implications for nursing. With the ever growing demand on emergency care nationwide, there is a vast need to figure out affordable solutions to the simple challenge of improving patient flow and therefore decreasing overall length of stay. With something as simple as the implementation of a Results Pending Treatment Area, which simply involved the conversion of a large underutilized room into a waiting area with six recliner chairs, Emergency Department staff have the benefit of moving patients through the system significantly faster than before. With ever pressing demands on Emergency Departments to meet national metrics for reimbursement, this becomes all the more essential. Also, this reduction in length of stay is discussed in the literature to positively impact patient outcomes. With the primary

focus of every good nurse being that of excellent and safe patient care, this is a top priority.

Recommendations

This research study should be the first of many of its kind in the implementation of a Results Pending Treatment Area that not only creates a change, but then analyzes the results. Statistics have the power to support lasting change, and it is essential that comparative data be collected for any future studies to ensure the change is effective. This researcher recommends that a number of other Emergency Departments that have a desire to reduce overall patient length of stay and therefore improve patient flow work to implement a RPTA in their departments and then to analyze the results, either between prior data or to a competitive group, such as was done here. As more research is conducted that supports such a change, and more Emergency Departments implement this new model of care, patient expectations will become accustomed to both the setting of the RPTA, and the benefits it provides.

Conclusion

Although a new concept in the research literature, the implementation of a Results Pending Treatment Area in a Level One Trauma Center Emergency Department has been shown to significantly reduce overall patient length of stay. This reduction has the potential to improve many aspects of patient care in emergency nursing for both the patient and the staff members involved. Although further research should be conducted to further support this unique study, the results are promising of a new model of care that has the potential to make a lasting positive change for Emergency medicine.

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