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## Research Article

### Evaluating Triage Practices in Emergency Department Fast Tracks

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#### Abstract

**Background:** Emergency Department (ED) overcrowding is a serious issue that continues to affect hospitals across the nation. Fast Tracks (FT) are one solution being employed to decrease overcrowding, facilitate patient flow, and improve patient satisfaction. With a proliferation of Fast Tracks, what additional information is needed beyond the acuity index, 3-, 4-, or 5-level system for evaluating patient acuity, optimizing resource allocation, and achieving a 90-minute visit benchmark?

**Purpose:** This study examined the feasibility of developing and implementing a triage tool for evaluating patient acuity, resource allocation, and social determinants in ED FT patients and explored the relationship between patient acuity, resource allocation, and social determinants on patient outcomes of length of stay and patient satisfaction.

**Results:** The two most common presenting chief complaints were musculoskeletal (60%) and dermatologic (25%). Over 50% of the patients had at least one delay, and the top three reasons for delay were medication administration (25%), required procedure (32%), and x-ray (30%). Thirty percent of the FT visits discharged by a RN achieved the 90-minute benchmark, and 42.5% of the FT visits discharged by a NP achieved the 90-minute benchmark. Patients reported an overall satisfaction rating, satisfied or very satisfied, of greater than 88%. Social determinants of health of ED FT patients were identified as a critical need during the triage process.

**Major Conclusions:** The findings from this study support the feasibility of implementing an additional triage tool to augment information collected via the 3-, 4-, or 5-level acuity index system. From a clinically significant perspective, several structure and process characteristics were identified to ameliorate delays and prolonged length of stays, as well as improve patient satisfaction.

**Keywords:** Emergency department fast track; Patient acuity; Resource allocation

#### Introduction

Over the last decade, the number of Emergency Department (ED) visits in the United States increased 15 percent, from 120 million visits to 138 million visits [1]. This increase in ED visits results in persistent ED crowding. Emergency Department crowding is associated with patient safety concerns, increased patients Leaving Without Being Seen (LWBS), low patient satisfaction, and lost ED revenue [2]. Attempting to address this

serious issue, EDs have added Fast Tracks (FT) within their departments to provide patients with timely access to healthcare. Fast Tracks are commonly thought of as a separate process and/or location within an ED to care for patients with urgent, but less serious conditions. Studies have examined wait time in relation to presenting complaint and have found that many of the ED patients had minor, non-emergent, or self-limiting problems that ideally would be suited for a FT setting [3]. The idea of a FT is to attend more quickly to those patients who previously had to wait to be treated for minor injuries, such as sprains/fractures, lacerations, sore throats, rashes, and insect bites. Ultimately, the goal is

streamlining and expeditiously managing lower acuity patients.

Currently, many EDs use the Emergency Severity Index (ESI), a simple to use, five-level triage instrument that categorizes ED patients by evaluating both patient acuity and resources. The ESI is unique because it requires the triage nurse to anticipate expected resource needs, which is often estimated, based on previous experience with patients presenting with similar injuries or complaints. One recent study that examined almost 100,000 patients found that almost 20% were under- or over-triaged with the ESI [4]. A second study reported low accuracy of ESI score assignment among ED nurses [5]. Typically, patients categorized as ESI levels four and five, are triaged to the FT with a benchmark Length of Stay (LOS) of 90 minutes. While they may be assessed as being of lower acuity and/or requiring fewer human and/or diagnostic resources, acuity and resources do not describe the full profile of an ED FT patient.

As the ED is a window into the community harshly framing the contributions of social determinants that underlie trauma resuscitations, repeat child visits for asthma exacerbation, or sepsis due to delay in seeking care, it is critical to assess social determinants of health as part of the initial triage process. Care in ED FTs include diagnosing and treating medical problems, but in order to comprehensively assess and intervene, providers must understand the impact of social determinants of health on the ED FT plan of care and length of stay [6]. The triage process must account for both medical treatment of a disease and the “Facts of Life” - known as social determinants of health. With this growth in FTs, there are opportunities to update the triage process so that the right care is being delivered at the right service level [2]. Specific objectives for this study were to:

- 1) develop a triage tool to assess patient acuity and resource allocation in ED FTs.
- 2) test the feasibility of incorporating a triage tool for assessing patient acuity and anticipated resource needs in ED FT patients.
- 3) evaluate the relationship between patient acuity and resource allocation on patient outcomes including length of stay and patient satisfaction, in ED FTs.

## Methods

A prospective study was conducted in two phases at an ED located at a large, urban academic health system in the mid-Atlantic region of the United States. At the time of the study, the health system was comprised of three hospitals. Following Institutional Review Board approval, the author completed a three-month observation and followed a convenience sample of 40 patients, 18 to 80 years of age, who presented to the ED and were subsequently triaged to the ED FT. Following the observation, the

author developed a FT triage tool to be used in conjunction with the ED acuity index system. The FT triage tool was implemented with a convenience sample of 40 patients over a period of three months.

### Inclusion/Exclusion Criteria

Inclusion criteria included patients speaking any language, as well as patients with sensory deficits such as hearing, vision, or speech impairments. All non-urgent patients with ESI level four and five triaged to the FT that could be evaluated, treated, and discharged within 90 minutes were included. Patients triaged as ESI level one, two, or three, or ESI level four or five that necessitated resources that would increase anticipated LOS greater than 90 minutes were excluded from the study.

### Study Variables

The main research variables were the demographic information and the patients' profiles including age, gender, race/ethnicity, highest level of education, employment status, chief complaint, previous ED visit in the past five years, living situation, support with daily needs, presence of a primary care provider, medical history, current prescription medications and number of medications, type of housing and if homeless, mode of transportation to ED, interventions/treatments required during the visit, reason for delays due to ED operational factors, reason for delays due to patient factors, such as non-English speaking patient or mental health concern, discharge disposition by RN, discharge disposition by NP, reason for delays after visit complete. A benchmark of 90-minutes was used as the goal for the total LOS.

### Enrollment, Consent, and Data Collection Procedures

The project was conducted in two phases. During Phase I, the author observed 40 patients during their ED fast track total length of stay, beginning with either patient triage or registration, whichever the patient encountered first, and ending when the patient was discharged from the fast track. This was the tool development phase. During Phase II, the newly developed tool was implemented with a total of 40 patients. The duration of Phase I was limited to three months, and the duration of Phase II was also limited to three months.

Patients were triaged through the main ED by the triage nurse on duty. The author approached patients who were triaged to the FT and who met the inclusion criteria. The author explained the study and reviewed the consent. Following consent, the author reviewed the patient's medical record. Data was collected in person by the author beginning with the initial contact, and ending when the patient was discharged from the ED fast track. The same process occurred during Phase I and Phase II of the study.

During Phase I, observation and data collection included patient characteristics such as age, gender, race/ethnicity, marital

status, living arrangements, chief complaint, co-morbidities, and current medications. Contextual factors of the visit were collected during the observation, and included such items as orders for diagnostic testing and orders for consultation. Guided by the literature [2,7], additional factors that were considered in triage tool development and resource allocation included:

- FT wait time greater than an hour
- Adults 65 years or older with multiple co-morbidities
- Adults 65 years or older that live alone
- Systolic blood pressure greater than 180, and diastolic greater than 120
- Heart rate greater than 120 or less than fifty
- Pediatric fever elevated incrementally based upon age
- Psychiatric patients
- Headache, except sinus-related
- Skin reactions with fever, dyspnea, petechiae, or purpura
- Complex lacerations or pediatric facial lacerations
- Open fractures, femur fractures or conscious sedation
- Motor vehicle collision with neurologic deficits or extreme pain
- Abdominal pain
- Multiple complaints

Based on Phase 1 observations, a FT triage tool including patient acuity and resource allocation was developed. The new triage tool also included additional factors, i.e. social determinants of health that were assessed by the author and triage RNs during Phase I that increased length of stay greater than ninety minutes.

During Phase II, prior to implementing the FT triage tool, an educational program was provided to review the FT triage tool with the ED triage nurses. A goal of 90 minutes or less was established as the benchmark for a maximum length of stay in the ED FT. The objective was to have a valid and reliable triage tool for the FT, while removing the subjectivity component associated with the current ESI score. Although the ESI tool was launched with the intent to predict resource allocation, variability in ESI levels four and five designated for the FT, continued to be imprecise. The forecasted resource allocation was the second tier to ESI for levels four and five before designating the patient to the FT. The intensity of FT resources needed to be considered within the context of social

determinants and time. For example, labor-intense interventions and/or diagnostic-intense interventions and/or social determinants may prohibit meeting the benchmark of 90 minutes. The newly developed triage tool was paper and pencil, with a plan to evolve into a web-based tool. Triage tool items are listed below:

- a) Date of observation
- b) Start time of observation in ED triage/quick registration
- c) End time of observation in ED triage
- d) Time patient placed in fast track room
- e) Time NP entered room and began encounter
- f) Times to measure any diagnostic testing necessary during visit: X-rays, CT Scan, MRI, Doppler, Ultrasound
- g) Times to measure delays between services/consultation necessary for evaluation
- h) Time patient discharged by NP
- i) Time patient discharged by RN
- j) Total time of patient encounter
- k) **Delays:** Other factors noted delaying patient encounter
  - Complex/multiple lacerations necessitating increase skill and time
  - Labor intensive procedures: Bartholin cysts, multiple abscesses requiring incision and drainage, wound care, etc.
  - Adults with multiple co morbidities
  - Patients that live alone
  - Psychiatric patients
  - Headache other than sinus related
  - Skin reactions with fever, dyspnea or petechiae
  - Open fractures, femur fractures or conscious sedation
  - Motor vehicle collision with neurological deficits or extreme pain
  - Abdominal pain
  - Pregnancy bleeding
  - Multiple complaints
  - Intravenous fluids
  - Abnormally high or low vital signs

## Data Collection Schedule

	ED Triage Area	ED Fast Track Area
Patient Profile	X	X
Fast Track Triage Tool	X	X
Patient Satisfaction Tool		X
Length of Stay (in minutes) Patient Discharge by NP Patient Discharge by RN		X
Delays		X
Meet 90-minute Benchmark		X

## Results

Descriptive summary statistics and frequency distributions were calculated for all study variables. Means and standard deviations were calculated for continuous variables and percentages for the categorical variables.

### Description of Sample

During Phase I (N=40), 50% of the subjects were women. Fifty-eight percent of the subjects were between the ages of 18 to 40 years of age, while 42% were age 41 or older. Fifty-five percent of the subjects were African American, 40% were Caucasian, and five percent were Asian. Over half of the subjects reported having a past medical history of at least one medical condition and 38% of the subjects reported taking at least one medication.

In Phase II (N=40), 58% of the subjects were women. Fifty percent of the subjects were between 18 to 40 years of age, 75% of the subjects were African American, while 20% were Caucasian. Seventy-one percent of the subjects reported a medical history with at least one illness and 17.5% of the subjects reported taking at least one medication. There was no statistical significance associated with age, gender, race, living arrangements, housing, educational preparation, employment, mode of transportation to the ED, medical history, or current medications.

### Chief Complaint

In Phase I, the three most common presenting chief complaints were musculoskeletal (60%) with a mean LOS of 250 minutes, dermatologic (25%) with a mean LOS of 207 minutes, and respiratory (12.5%) with a mean LOS of 147 minutes. In Phase II, the chief complaint most often seen was musculoskeletal (50%) and mean LOS of 121.35 minutes. Dermatologic complaints were the second highest at 25% with a mean LOS of 121.8 minutes. The third highest chief complaint noted was “other,” including dental, gynecologic, and gastrointestinal, accounting for 17.5% of the visits with a mean LOS equal to 102.14 minutes.

### Delays

In Phase I, the three reasons for a single delay: medication administration (52.5%), required procedures (32.5%), and x-rays (30%). Delays were also related to multiple complaints, psychiatric issues, labs, and/or non-English speaking. Correlation of mean LOS was significant ( $p < .01$ ) with the total number of delays occurring during the visit, with each increase in the number of delays, the LOS increased as listed in (Table 1).

N	Mean LOS (Minutes)	Standard Deviation
None: (n=5)	155	40.737
1 Delay: (n=21) Medication administration OR Required procedure OR X-rays	218.14	77.994
2 Delays: (n=9) Psychiatric issues AND/OR Lab results pending AND/OR Non-English speaking	248.33	81.462
3 Delays: (n=5) Psychiatric issues AND/OR Lab results pending AND/OR Non-English speaking	277.2	60.85

**Table 1:** Phase I: Overall Delays.

In Phase II, the three reasons for a single delay: medication administration (40%), x-rays (22.5%), and required procedures (20%). Patients who received medication during the visit, 87.5% had a greater than ninety minute LOS. Patients who received an x-ray during the visit, 78% had a greater than ninety minute LOS. Additional delays included: multiple complaints, psychiatric issues, labs, non-English speaking, and consults.

### Length of Stay

In Phase I, the mean total time for LOS being discharged by a RN was 224.42 minutes and the median was 226.5 minutes. The mean total time for LOS being discharged by a NP was 199.8 minutes and the median was 190.5 minutes. The range was 90 to 360 minutes for RN discharge and 77 to 350 minutes for NP discharge. For Phase II, the mean total time for LOS being discharged by RN

was 117.18 minutes with a range of 48 minutes to 257 minutes. The mean total time for LOS with discharge by NP was 108.30 with a range of 47 minutes to 250 minutes. Thirty percent of the FT visits discharged by a RN achieved the 90-minute benchmark, while 42.5% of the FT visits discharged by a NP achieved the 90-minute benchmark.

## Patient Satisfaction

Patient satisfaction for Phase I is depicted (Table 2). Overall satisfaction of: 1) wait time before brought to FT (82.5%), 2) wait time before being seen by NP (90%), 3) provider's concern for explanation (92%), 4) overall care (93%), 5) recommendation of ED to others (88%), 6) staff cared (90%), 7) courtesy (87%), 8) privacy (92%), and 9) comparison to previous visit (85%).

	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
Wait time before brought to treatment area	60%	22.50%	10%	2.50%	5%
Wait time in treatment area before seen by NP	60%	30%	0%	5%	5%
Provider's concern for explanation	62%	30%	8%	0%	0%
Rating of overall care	61%	32%	0%	5%	3%
Recommend ED to others	60%	28%	10%	0%	2%
Staff Cared	65%	25%	8%	0%	2%
Courtesy	66%	21%	11%	0%	2%
Privacy	56%	36%	8%	0%	0%
Comparison to previous visit	59%	26%	7%	4%	4%

**Table 2:** Phase I: Summary of Patient Satisfaction.

Patient satisfaction for Phase II is depicted (Table 3). Overall satisfaction of: 1) wait time before brought to FT (80%), 2) wait time before being seen by NP (85%), 3) provider's concern for explanation (87%), 4) overall care (90%), 5) recommendation of Jeff ED to others (90%), 6) staff cared (97.5%), 7) courtesy (95%), 8) privacy (92%), and 9) comparison to previous visit (90%).

	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
Wait time before brought to treatment area	40%	40%	10%	7.50%	2.50%
Wait time in treatment area before seen by NP	40%	45%	12.50%	2.50%	0%
Provider's concern for explanation	35%	52%	12.50%	0%	0%
Rating of overall care	55%	35%	10%	0%	0%
Recommend ED to others	60%	30%	10%	0%	0%
Staff cared	57.50%	40%	2.50%	0%	0%
Courtesy	72.50%	22.50%	5%	0%	0%
Privacy	57.50%	35%	7.50%	0%	0%
Comparison to previous visit	67.70%	22.60%	9.70%	0%	0%

**Table 3:** Phase II: Summary of Patient Satisfaction Questions.

## Conclusions and Discussion

The major findings from this study support the feasibility of implementing an additional triage tool to the ESI for assessing patient acuity and resource allocation in ED FT patients. The sample size was not sufficient to ascertain a statistically significant relationship between patient acuity and resource allocation on patient outcomes in ED FTs. However, from a clinically significant perspective, several structure and process characteristics were identified that were related to delays, prolonged length of stay, and patient satisfaction. Improvement in patient outcomes, and attention to delays and length of stay, requires a deliberate and thoughtful approach to nursing care.

Findings from this study provide an important step in building the body of evidence to direct approaches to design nursing care to improve ED FT outcomes. Based on the findings of this study and previous literature review, several recommendations are made related to structure and process improvement including:

- Refining the ED FT triage tool to assess patient acuity, including social determinants of health, to better account for resource allocation in ED FTs.
- Providing a structured orientation for ED staff that will cross cover in the FT, so that they understand the relationship of patient acuity, resource allocation, and social determinants of health on accomplishing a 90-minute FT visit. It is essential that if LOS has been assigned as a benchmark, all triage RNs must be aware of process. As part of the ED orientation, accurate triage should be incorporated into education, along with FT core RN confirming appropriate patient assignment.
- Developing and implementing standing flow orders for the triage RN to expedite the triage process to the ED FT. One example would be standing flow orders for x-ray. X-ray was identified as one of the three main causes for delay during phase I and phase II.
- Creating a core FT team including a RN and technician to expedite interventions, such as medication administration, procedures, and discharge in order to decrease delays. Medication administration and procedures were identified as the top two causes for delay. This would also address the prolonged length of stay for patients discharged by RN.
- Incorporating double coverage during peak times to offset the volume of patients that one NP must treat. This would address the prolonged length of stay for patients discharged by NP.
- Incorporating a dedicated registrar for FT patients that has flexibility to register patients parallel to visit to offload delay in length of stay in conjunction with a discharge lounge.

## Implications

The results of the study will be reviewed with ED leadership for operational and management recommendations. The results will be generated into operational planning as part of the organization's strategic plan. ED crowding has resulted in greater demand and longer time-to-triage and time-to-provider wait times, making accurate triage more important than ever before to avoid poor patient outcomes [7]. The importance of including a second tier of triage to the ESI system will be stressed to leadership to decrease the subjectivity component associated with the triage nurse. In addition, social determinants of health must be included in the tool either as part of patient acuity profile or a separate category to assess and evaluate since social determinants will significantly impact LOS regardless of the designated ESI level. Implications for practice include instituting a FT liaison to provide coordination of clinical services in the FT area among FT staff, and with main ED staff. This liaison would address delays both internal and external to the FT area, as well as identify reasons for patient wait times. A second implication includes incorporating measures for quality improvement including length of stay and patient satisfaction related to FT core group of providers.

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