Demographic and Financial Analysis of EMTALA Hand Patient Transfers

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Abstract In the United States, the Emergency Medical Treatment and Active Labor Act (EMTALA) effectively requires Level I trauma centers to accept hand trauma transfers for higher level of care if capacity exists. However, patient transfer for non-medical reasons, such as ability to pay, is still perceived as a common practice. We hypothesized that EMTALA would cause selective transfer of hand patients who were underinsured or uninsured, thus, effectively burdening a Level I trauma center. A dedicated transfer center documented the demographics and outcomes of all calls for hand trauma transfers from December 2003 to September 2005. This data registry was reviewed for age, gender, race, insurance status, and length of hospital stay. This data was compared with direct admissions to the emergency room for hand emergencies during that same time period. During the 2-year time period, a total of 151 calls for EMTALA transfer were received for hand emergencies. Our institution accepted 92 of these patients for transfer. Reasons for not accepting transfer included lack of bed availability and unavailability of the on-call surgeon due to other emergency operative cases. Compared with hand emergency patients brought directly to our emergency department during the same time period, transferred patients were younger and had a shorter length

of stay. Interestingly, they were very similar in terms of sex, race, and insurance status. These data suggest that the primary motivations for EMTALA hand trauma transfers are truly complexity of patient care and specialist availability. Given the often urgent nature of hand trauma surgery and the limited resources available, expansion and development of hand and microsurgery regional centers will be vital to adequately meet demand without overburdening existing centers.

Keywords Trauma · EMTALA · Financial · Transfers · Insurance

Introduction

In the United States, the Emergency Medical Treatment and Active Labor Act (EMTALA), which was signed into law in 1986, defines broad categories for interhospital transfer of patients after they have sought care in the Emergency Department (ED) [2, 4, 12]. The law requires that patients be stabilized in the ED, regardless of insurance status, and transferred to another facility if a higher level of care is required. EMTALA further requires that the tertiary center accept the patient regardless of insurance status as long as capacity exists.

There is a perception that factors other than the injury itself, such as demographics, staffing of on-call physicians, insurance status, and ability to pay may influence transfers. In fact, many surgical specialties view EMTALA as a mandate to provide continuous coverage to the ED, which often goes uncompensated [5]. The situation may have been exacerbated in 2003, when EMTALA requirements were modified, allowing each hospital the discretion to maintain on-call staff to specifically meet the needs of its patients [6,

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[15]. This theoretically increased the EMTALA burden on Level I trauma centers since many hand specialists chose to opt out of community hospital ED coverage. Community hospitals were left with no choice but to transfer hand trauma patients to a higher level of care at a tertiary facility [14].

Few studies have evaluated the factors associated with EMTALA transfer after injury or specifically of its ramifications relating to hand surgery transfers [1, 8, 11, 16]. Currently, there is a crisis in hand surgery with many hand surgeons limiting or eliminating ER call due to concerns about liability, compensation, or work hours. Fewer hand surgeons are including microsurgery in their practice, which limits the resources available to meet the demand for replantation. A recent survey of all active ASSH members demonstrated that 74% of respondents have noted a decrease in replantation attempts over the past decade [13]. This was due in part to refinements in indications, fewer amputations, decreasing reimbursement, busy elective schedules, lack of confidence in performing replantation, or disappointment with results of replantation. Therefore they conclude that economic, educational, and practical factors are limiting the practice of microsurgery in hand practices [13]. Additionally, surgeons at academic Level I trauma centers often bear the burden of replantation and see an urgent need to increase local and regional coverage.

The purpose of this study was to evaluate if EMTALA would result in selective transfer of hand patients who were underinsured or uninsured, thus, effectively burdening a Level I trauma center.

Materials and Methods

Data Source

Transfers to our Level I trauma center have been coordinated by a designated transfer center for the past 6 years. Our transfer center is available 24 h per day via a toll-free number and is staffed by communication specialists. All calls are documented, including date, transferring facility and physician, injuries, service requested, and whether a higher level of care is required, i.e., EMTALA request. All hand trauma transfer requests are referred to the on-call hand surgery attending who makes all decisions regarding transfers. Patient bed availability is coordinated with the nursing supervisor according to hospital policy.

Our institution is verified by the American College of Surgeon Committee On Trauma as a Level I trauma center for adult and pediatric patients. Our primary catchment area covers roughly 1,000 square miles and a population of over one million. Our local area has a population of over 57,000, a median household income over \$90,000, compared with a

national average of \$42,000. There is a large concentration of affluent, well-educated employees in the science and technology fields [17].

We reviewed all records for hand trauma transfers from December 2003 to September 2005 for age, gender, race, insurance status, diagnosis, and length of hospital stay.

Study Design

This was a retrospective review study approved by the Institutional Review Board of our institution. The study group consisted of patients who had sustained hand trauma and were subsequently transferred to our Level I trauma center from another hospital, and the controls were hand trauma patients from this tertiary center's primary catchment area.

Hypothesized Risk Factors

Patient age, gender, race, insurance status, and length of hospital stay were analyzed as potential risk factors for hospital transfer. Patient age was categorized into three subgroups: (1) children (0–17), (2) adults (18–64), and (3) seniors (65 and older). Patient race was categorized into four subgroups: (1) white, (2) African-American, (3) Hispanic, or (4) other. Insurance status subgroups included: (1) insured (commercial, Worker's Comp, Medicare), (2) underinsured (Medicaid), and (3) no insurance (self-pay).

Data Analysis

Statistical analysis was performed using commercially available software from STATA. The *t* test was used to determine if the means of the two groups were different from each other. A *p* value of less than 0.05 was considered statistically significant.

Results

During a 21-month period (December 2003 to September 2005), 212 hand emergency patients presented directly to our emergency room. During this same time period, 151 calls were received by the transfer center requesting transfer of hand trauma patients from the ED of another hospital. Of these, eight calls (5%) were canceled due to patient transfer to another facility. Sixteen calls (11%) requested consultation from the hand surgery attending after which the initial physician decided transfer was not necessary. After discussion with the referring physician, 35 patients (23%) were denied since no capacity existed. This included lack of hospital bed availability or surgeon unavailability due to other surgery. Our institution accepted 92 (61%) of these patients.

Table 1 Comparison of diagnosis between the EMTALA hand surgery transfer group and the primary catchment area group.

The EMTALA group had a higher percentage of amputations and degloving injuries, while the primary catchment group had a higher percentage of simpler hand emergencies. “Other” includes gangrene, paint gun injuries, snakebites, chronic open wounds, cat/dog bites, and foreign bodies

Injury	EMTALA transfers (%)	Primary catchment area (%)
Amputation	50 (54.3)	38 (17.9)
Laceration	17 (18.5)	86 (40.6)
Degloving	8 (8.7)	12 (5.7)
Fracture	6 (6.5)	21 (9.9)
Gunshot Wound	5 (5.4)	7 (3.3)
Crush	2 (2.2)	4 (1.9)
Explosive Injury	2 (2.2)	1 (0.5)
Infection	1 (1.1)	18 (8.5)
Dislocation	1 (1.1)	3 (1.4)
Other	0 (0)	22 (10.4)

The most common reasons for direct emergency room admissions from the local primary catchment area were: lacerations (40.6%), devascularized or amputated digits (17.9%), fractures (9.9%), or infections, (8.5%; Table 1). The most common reasons for EMTALA transfer included: devascularized or amputated digits (54.3%), lacerations (18.5%), degloving wounds (8.7%), and fractures (6.5%).

Compared to the 212 hand emergency patients from our local area during the same time period, EMTALA transferred patients were younger (35.9 vs. 41.0 years) and had a shorter hospital stay (3.5 vs. 4.7 days) but were very similar in terms of sex and race (Table 2). Interestingly, the payer mix was very similar between the two groups (Table 3). There was a higher percentage of complex cases including amputations and degloving injuries in the EMTALA transfer group compared with the local group (EMTALA—63% vs. local—24%). The hand emergency patients from our local

area had a higher percentage of simpler problems such as lacerations, infections, and fractures (local—59% vs. EMTALA—26%).

Discussion

Urgent EMTALA hand surgery transfers are often perceived as being motivated by factors other than complexity of care or physician availability at the transferring institution. Anecdotally, surgeons often recall uninsured patients that are transferred at inconvenient times for problems that potentially could have been managed at the original institution. This type of transfer increases the burden on already overextended academic Level I trauma centers and regional referral centers, both financially and in terms of surgeon workload. The aim of this paper was to demonstrate that not only are these services necessary, but there may also be a financial benefit to the institution.

Recent studies have examined the profitability of hand surgery programs at academic centers. Alserman et al. [1] and Hasan et al. [7] reviewed their experiences at the University of Michigan and found that not only does a diverse and far-reaching hand surgery program contribute to the academic mission of the institution, but also contributes to its financial well-being as well. Specifically, Alderman et al. found that in 2005, only 4.2% of hand

Table 2 Comparison of EMTALA transfer patients and patients admitted directly from the primary catchment area.

	EMTALA (%)	Non-EMTALA (%)	<i>p</i> value
Children (0–17)	14.6	6.6	0.0124*
Adults (18–64)	76.8	80.2	0.435
Seniors (65+)	8.6	13.2	0.173
Male	82.8	75	0.0767
Female	17.2	25	0.0764
White	48.3	55.7	0.165
Hispanic	39.7	35.4	0.404
Black	5.3	4.7	0.795
Other	6.6	4.2	0.311
LOS <1 day	61	49.5	0.031*
LOS 1–10 days	35	43	0.125
LOS >10 days	3.7	7.0	0.1795

They are very similar in terms of ethnicity and sex but showed statistically significant differences in age and length of stay. The EMTALA group was younger and had a shorter length of stay when compared with the primary catchment area patients. The *asterisks* represent statistically significant differences between groups

Table 3 Comparison of the payer mix of transferred patients compared to patients admitted directly from the primary catchment area.

Insurance status	EMTALA (<i>n</i> =92; %)	Non-EMTALA (<i>n</i> =212; %)	<i>p</i> value
Commercial	48.5	47.9	0.836
Medicare/Medicaid	16.2	19.7	0.395
Self-pay	35.3	32.3	0.5511

They are very similar in terms of insurance coverage

trauma patients were uninsured. The net profit margin for the treatment of all hand trauma patients was 18% for the year [1]. Lineaweaver et al. [9] recently published their experience with treating patients through a center for microsurgery and complex reconstruction. Their study population included a large number of hand patients. Their experience demonstrated revenue of over 2 million dollars with a profit of 20–30% derived from these procedures during certain years. According to Chung et al. [3], 1,153 finger replants were performed in 1996, of which 93% of the cases were covered by insurance. This same epidemiological study also demonstrated that only 15% of hospitals in the United States perform finger replantation. Of these, 60% of institutions performed only one such procedure annually. They conclude that because finger replantation is a complicated and resource intensive procedure that perhaps “centers of excellence” can be established to potentially improve outcome.

The effect of EMTALA on specialist coverage in EDs both nationally and on a statewide level has been examined. A recent study by Menchine et al. [10] found that only 60% of emergency rooms had plastic or orthopedic coverage. This has significantly worsened since the introduction of the most current EMTALA mandates in 2003. For example, 40% of orthopedic and plastic surgery transfers for a higher level of care take over 3 h due, in part, to difficulty finding an available specialist. Rudkin et al. [14] specifically looked at California, and found that, among other things, 70% of subspecialty consultants limited consultations based on insurance status. They also found that reimbursement for taking subspecialty call has decreased. The end result of EMTALA, combined with other influences has drastically decreased the availability of hand surgery consultation at community hospitals. This funnels complex cases to the hospital of last resort, the Level I trauma center.

Patients transferred to our Level I trauma center under EMTALA were strikingly similar in terms of age, sex, race, length of stay, and insurance status. Transferred patients tended to be younger and with a shorter hospital stay. Not surprisingly, direct hospital admissions from the primary catchment area had a higher percentage of routine or simpler surgical problems. This included simple lacerations, infections, and fractures. The transferred patients demonstrated a much higher percentage of amputated digits and degloving injuries, which understandably cannot be managed and smaller community centers. Contrary to our hypothesis, these data suggest that the primary motivations for EMTALA hand trauma transfers are truly complexity of patient care and specialist availability. In addition, because many of the patients are covered by insurance, they do not necessarily represent a financial burden to the accepting institution.

The difference that we found in the length of stay and the age of the patients may be explained by several factors.

First, younger patients have fewer morbidities, and therefore are likely to have a quicker recovery. In part, this explains why more severely injured EMTALA hand trauma transfers had a shorter length of stay compared with the direct hospital admissions. Second, after reviewing the direct hospital admission charts, it was found that many of the older patients’ injuries often were a result of poly-trauma, or falls, which required more intensive treatment and evaluation by multiple services. Age is therefore a confounding variable for length of stay.

Given the often urgent nature of hand trauma surgery and the limited resources available, expansion and development of hand and microsurgery regional centers will be vital to adequately meet demand without overburdening existing centers. Resources should be devoted to growth of these programs. One possible future direction would be to develop or standardize criteria for hand trauma transfers. Once developed, educational materials could be provided to referring hospitals with an emphasis on when to call a hand surgeon. Additionally, it would be interesting to reexamine the data over recent years given the current economic climate to see if there have been changes in referral behavior. The ultimate goal should be streamlined, optimal care of complex hand surgery emergencies.

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