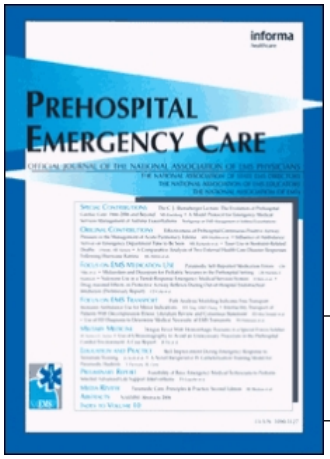

Prehospital Emergency Care
Publication details, including instructions for authors and subscription information:
http://www.informaworld.com/smpp/title~content=t713698281

Patient and Physician Perspectives on Ambulance Utilization

Sharon L. Jacob [a]; Jeanne Jacoby [a]; Michael Heller [a]; Jill Stoltzfus [a]
[a] St. Luke's Hospital, Emergency Medicine Residency, Bethlehem, Pennsylvania

Online Publication Date: 01 April 2008

To cite this Article: Jacob, Sharon L., Jacoby, Jeanne, Heller, Michael and Stoltzfus, Jill (2008) 'Patient and Physician Perspectives on Ambulance Utilization', Prehospital Emergency Care, 12:2, 176 — 181

To link to this article: DOI: 10.1080/10903120701710058
URL: http://dx.doi.org/10.1080/10903120701710058

Patient and Physician Perspectives on Ambulance Utilization

Sharon L. Jacob, MD, MPH, Jeanne Jacoby, MD, Michael Heller, MD, Jill Stoltzfus, PhD

Abstract

Objective. The objective of the current study was to define the clinical and demographic characteristics of ED patients who used ambulance transport (USERS) compared to contemporaneous non-ambulance users (NON) and to determine the reasons users gave for their choice to use ambulance transport. **Methods.** A single researcher queried a convenience sample of consenting ED patients regarding reasons for choice of transport to the ED, knowledge of ambulance cost, and self-estimation of illness or injury severity on a (1 most severe, 5 least severe) five-point Likert scale. We also asked if the treating physician agreed with transport choice. **Results.** Of 311 participants (97% response rate), USERS (N = 71, 22.8%) were older than NON (53 vs. 35, $p < 0.0001$) and were more sick according to self-rated illness severity (mean rank 128 vs. 156, $p = 0.02$), nurse triage score (mean rank 103 vs. 153, $p < 0.0001$), and admission rate (37% vs. 15%, $p < 0.0001$). Patient decision regarding ambulance use was associated with both having someone who called an ambulance for them and self-estimation of illness severity (or lack thereof). Physicians agreed with transport method in 68% of USERS and 92% of NON (overall kappa = 0.6, $p < 0.0001$). **Conclusions.** Ambulance users were more likely to be more sick as determined by commonly used measures than nonusers. ED physicians almost always agreed with nonuse of ambulance transport and two-thirds of the time agreed that a patient's decision to use ambulance transport was appropriate. **Key words**: ambulance; transport; emergency department; resource use.

PREHOSPITAL EMERGENCY CARE 2008;12:176–181

Introduction

One of the 15 essential EMS components identified in the Emergency Medical Services System Act of 1973[1] is that of review and evaluation. "Inappropriate use" and "unmet need" are two parameters that have been suggested as measures of ambulance service effectiveness.[2] Before attempting to assess appropriateness of use, one must first assess utilization.

In addition to being considered an objective measurement of quality, ambulance utilization impacts motor vehicle accidents during response, ED resources, and frequency of diversion. These issues need to be observed and trended to plan for future demographic changes.[3] Consideration must also be given to interventions that may allow for change in utilization.

The objective of the current study was to define the clinical and demographic characteristics of ED patients who used ambulance transport (USERS) compared to contemporaneous non-ambulance users (NON) and to determine the reasons users gave for their choice to use ambulance transport. Secondary objectives were to assess the rates of inappropriate use and unmet need.

Methods

Setting and Population

This study was conducted at a community teaching hospital in Bethlehem, Pennsylvania, which is a designated Level 1 trauma center with an annual ED census of 57,000. Bethlehem is a city of 19.24 square miles, with a population of 71,329 (81% White, 3.6% African American, 18% Hispanic or Latino, 2.5% other) and a median household income of $35,815. Thirty-three percent have a high school diploma or the equivalent, 35% have either some college, an associate's degree, or a bachelor's degree, and 9.6% have a master's or greater degree.[4] There are forty-five different ambulance services that transport patients calling 9-1-1 to our hospital.

Study Design

During four 12-hour shifts, a single researcher queried consecutive consenting ED pediatric and adult patients regarding reasons for choice of transport to the ED, knowledge of ambulance cost, and self-estimation of illness or injury severity on a (1 most severe, 5 least severe) five-point Likert scale (Appendix 1). The researcher was a second year emergency medicine resident, dressed in professional clothes and not wearing a white coat, who was not involved in patient care during these four shifts. Data abstracted from the medical record included insurance availability, chief complaint, nurse triage score, and discharge diagnosis.

A separate form (Appendix 2) that queried whether the physician felt the patient should have been transported by 9-1-1 ambulance, the discharge diagnosis, and the patient disposition was completed by either the treating resident or attending physician. There were no decision-making criteria given to the physician, and the physician was not asked to complete the form at a set time during the ED visit.

Received November 29, 2006 from St. Luke's Hospital, Emergency Medicine Residency, Bethlehem, Pennsylvania (SLJ, JJ, MH, JS). Revision received August 13, 2007; accepted for publication August 20, 2007.

This study was presented as a poster at the ACEP Research Forum, New Orleans, LA, November 2006.

Address correspondence and reprint requests to: Sharon L. Jacob, MD, MPH, Emergency Medicine Residency, 801 Ostrum Street, Bethlehem, PA 18015. e-mail: jacobs@slhn.org.

doi: 10.1080/10903120701710058

Patients presenting as a trauma alert were excluded, but a family member or other surrogate present at the time the transport decision was made was queried for all other patients who could not complete the survey themselves. The shifts chosen covered day and night, weekday and weekend hours, and the survey was available in both English and Spanish.

This study protocol was submitted to our IRB panel and approved by exempt review.

Data Collection

A single researcher tabulated the data in an Excel spreadsheet; analysis was via SPSS V 12.1. For continuous/interval-level variables with a normal data distribution, significance testing was via an independent samples *t*-test. For discrete/categorical variables, we used separate chi-square tests of general association. For ordinal (ranked) variables, separate nonparametric Mann-Whitney rank sum tests were conducted to compare mean rankings based on median scores.

For patient self-estimation of ambulance cost, due to the highly unequal sample sizes and non-normal distribution for the ambulance user group, a nonparametric Mann-Whitney rank sum test was conducted to compare mean rankings (median scores). For greater ease of interpretation, median scores for the monetary amounts are reported along with mean rankings.

A kappa coefficient was obtained to determine whether physicians' level of agreement about patients' chosen mode of transportation was greater than what chance would predict. In this case, the Fleiss kappa coefficient was used because of the presence of multiple raters (physicians).[5] Given the multiple comparisons, a Bonferroni correction was applied to the nine independent variables to maintain an overall type I error rate of 5%. Therefore, an adjusted p of 0.006 is needed to reach statistical significance for each individual comparison.

RESULTS

Three hundred twenty-two patients were approached; 311 participated (97%). Not all patients completed every question.

Twenty-two percent (71/311) were USERS; they were more likely to be older (53, vs. 35, $p < 0.0001$), have a higher nurse triage score (mean rank 103 vs. 156, $p < 0.0001$), and be admitted to the hospital (37.3% vs. 14.5%, $p < 0.0001$) (Table 1). There was a trend for USERS to have a higher patient-rated severity score (mean rank 128 vs. 156, $p = 0.02$) than NON. Forty-six percent of USERS had the ambulance called for them by someone else, often (85%) noting this as their sole reason for transport choice. Thirteen (18.3%) felt that they were "too sick to come to the hospital" by any other means; 7 (9.8%) felt that they had "no other way" to get to the ED (Table 2). Of NON, 129 patients (53.7%) indicated that they were "not sick enough"; 51 (21.2%) "had

TABLE 1. Patient Demographics and Survey Results

Variables	USERS	NON-users	Statistical Test Results	Significance Level[f]
Age: mean (std) [a]	53.53 (28.73) ($n = 70$)	35.17 (22.13) ($n = 249$)	t (93.22, 319) = 4.95	p < 0 .0001
Gender:[b]				
1. Male % (#)	1. 39.4% (28/71)	1. 47.4% (118/249)	$\chi^2(1, 320) = 1.41$	$p = 0.24$
2. Female % (#)	2. 60.6% (43/71)	2. 52.6% (131/249)		
Survey type:[b]				
1. English % (#)	1. 98.6% (70/71)	1. 90.8% (227/250)	$\chi^2(1, 321) = 4.85$	$p = 0.03$
2. Spanish % (#)	2. 1.4% (1/71)	2. 9.2% (23/250)		
Admission % (#)[b]	37.3% (25/67)	14.5% (35/242)	$\chi^2(1, 309) = 17.51$	$p < 0.0001$
Patient knew ambulance cost % (#)[b]	15.5% (9/58)	35.8% (78/218)	$\chi^2(1, 276) = 8.71$	$p = 0.003$
Patients had insurance % (#)[b]	85.5% (53/62)	90% (202/235)	$\chi^2(1, 297) = .009$	$p = 0.92$
Patient-rated severity score[c]	128.14 (mean rank) ($n = 57$)	156.93 (mean rank) ($n = 245$)	$z = -2.31$	$p = 0.02$
RN triage score[c]	103.05 (mean rank) ($n = 55$)	153.71 (mean rank) ($n = 232$)	$z = -4.40$	$p < 0.0001$
Patients' self-estimated ambulance cost[d]	40.22 (mean rank) $350.00 (median) ($n = 9$)	44.99 (mean rank) $450.00 (median) ($n = 79$)	$z = -.53$	$p = 0.60$
Physician agreement % (#) [e]	68% (44/65)	92% (205/222)	Kappa = .61	$p < 0.0001$

[a] Continuous/interval-level variable with a normal data distribution; therefore, an independent samples *t*-test was conducted.
[b] Discrete/categorical variables; therefore, separate chi-square tests of general association were conducted.
[c] Ordinal (ranked) variables; therefore, separate nonparametric Mann-Whitney rank sum tests were conducted to compare mean rankings based on median scores.
[d] Due to the highly unequal sample sizes and non-normal distribution for the ambulance user group, a nonparametric Mann-Whitney rank sum test was conducted to compare mean rankings (median scores). For greater ease of interpretation, median scores for the monetary amounts are reported along with mean rankings. However, the very small sample size in the ambulance user group may affect the accuracy of these results.
[e] A kappa coefficient was obtained to determine whether physicians' level of agreement about patients' chosen mode of transportation was greater than what chance would predict. In this case, a Fleiss kappa coefficient was deemed most appropriate due to the multiple raters (physicians). See Fleiss (1971)[28] for additional information.
[f] Given the multiple comparisons, a Bonferroni correction was applied to the nine independent variables to maintain an overall type I error rate of 5%. Therefore, an adjusted p of 0.006 is needed to reach statistical significance for each individual comparison (0.05/9). Statistically significant results are in bold type.

TABLE 2. Reasons for Ambulance Use (Total Patients = 71)[a]

	N	Percent of patients
Too sick to go any other way	13	18.3%
Quickest way to the hospital	2	2.8%
Someone else called the ambulance for me	33	46.4%
Would be seen quicker	2	2.8%
Could not afford any other way	0	0%
Too scared to come any other way	2	2.8%
Had no other way of getting to the ED	7	9.8%
My doctor told me to go via ambulance	4	5.6%
Other	17	23.9%

[a] Total does not tabulate to 71 because patients were permitted to provide more than one reason.

someone else" to bring them, and 23 (9.5%) "could not afford" the ambulance (Table 3).

There was no difference in insurance status between USERS and NON (53/62 vs. 202/235, p = 0.925). The 87 patients (28%) stating that they knew the cost of ambulance transport were less likely to have been USERS (9/58 vs. 78/218, p = 0.003). Twenty-two percent of patients arriving to the ED during the day (0800–2000 hour) arrived by ambulance, as did 21.2% (p = NS) of patients arriving at night (2000–0800 hour). The most common chief complaint of USERS was trauma (17/68, 25%) and respiratory (13/68, 19%), whereas that of the NON related to noncardiac pain or injury (70/252, 28%) and GI/GU/reproductive (48/252, 19%) (Table 4).

Physicians agreed with transport method in 68% of USERS and 92% of NON (overall kappa = 0.61, p < 0.0001).

DISCUSSION

In 1989, Cadigan et al. suggested that one could predict demand for emergency ambulance service in suburban communities based on population size and median income.[6] In a pediatric population, Maio et al. suggests that transport rate is inversely proportional to income,

TABLE 3. Reasons for Ambulance Nonuse (Total Patients = 240)[a]

	N	Percent of patients
Did not think of calling 911	7	2.9%
Thought an ambulance would take longer	11	4.5%
Not sick enough to come by ambulance	129	53.7%
Embarrassed to come by ambulance	1	0.4%
Had someone else to bring me	51	21.2%
Could not afford ambulance	23	9.5%
Too scared to come by ambulance	1	0.4%
Ambulance would have taken me to the wrong hospital	2	0.8%
Ambulances should be there for those sicker than myself	14	5.8%
My doctor told me not to come via ambulance	2	0.8%
Other	61	25.4%

[a] Total does not tabulate to 240 because patients were permitted to provide more than one reason.

TABLE 4. Chief Complaint[a]

	USERS (Total patients = 71)	NON-users (N = 240)
Respiratory	13 (18.3%)	23 (9.6%)
Cardiac	6 (8.4%)	22 (9.2%)
GI/GU/Reproductive	8 (11.3%)	48 (20%)
Psychological	4 (5.6%)	3 (1.3%)
Pain/Injury (noncardiac)	8 (11.3)	70 (29.2%)
Neurologic	9 (12.7%)	17 (7.1%)
Trauma	17 (23.9%)	10 (4.2%)
Ears, Eyes, Nose, Throat	1 (1.4)	27 (11.3%)
Skin	0 (0%)	12 (5%)
Pain/Injury/Trauma	25 (35.2%)	80 (33.3%)
Other	1 (1.4%)	20 (8.3%)

[a] Complaint total does not equal total patients because complaints fall into multiple categories.

educational level, and proportion of households with a vehicle, but not correlated with the presence of primary care physician resources.[7] In five Northeast, urban teaching hospitals, emergency ambulance use was associated with low baseline physical functioning, but not with frequent ED use.[8]

Studies suggest that emergency ambulance transport is also associated with age greater than 65,[8–10] free transport,[11] and a (modestly) shorter ED wait to be seen time.[12] Studies conflict as to whether transported patients are more[8,9,13] or less[14] likely to be of high acuity. At issue, too, is whether poverty is positively[10] or negatively[8] associated with ambulance transport. In Australia, being single, subscribing to the ambulance service insurance, and having mental, nervous, and trauma diagnosis were associated with greater demand for prehospital care.[9]

Our results suggest that patients transported by ambulance are generally older and more sick than those arriving at the ED by other means. Surveyed patients acknowledge that severity of illness is frequently not the primary reason for choice of transport method. They also note that the 9-1-1 call was often made by someone else. Should future studies determine that this "secondary source" for 9-1-1 call be, for example, police officers at the scene of motor vehicle crashes or nursing home care providers, this may allow for a focused educational intervention aimed at minimizing unnecessary transports.

Patients who believed that they knew ambulance cost were less likely to use ambulance transport. There is a large variability in patient-estimated ambulance cost; there also is a large variability in actual ambulance charges in this region. We did not match patient estimate with actual charge and therefore do not know if the two correlate. However, direct user charge (and patient knowledge of that charge) may be a potential intervention that would directly affect ambulance utilization.

Our secondary objectives were to assess the rates of inappropriate use and unmet need, as determined by

physician assessment. Several studies have addressed the issue of inappropriate use, as defined by Gibson as the proportion of all ambulance patients who do not need that care.[2] Studies have suggested that type of insurance, alcohol intoxication, being a nursing home resident, age less than 40, and having no other means of transport are factors associated with inappropriate use.[15–18]

Few recent studies address the issue of unmet need (the proportion of patients with a clinical need for ambulance services who did not receive it).[2] Studies occurring in the 1970s–80s showed rates of unmet need ranging from 53% to 81%.[2,19–22] In 1985, Hammond observed that 4% of trauma patients listed in the Dade County trauma registry were transported by private vehicle.[23] In 1987, 51% of patients admitted to a CCU or ICU in King County, Washington, for a suspected AMI had not called 9-1-1 before hospitalization.[24]

In 2003, an expert panel reviewed available research regarding medical necessity in EMS and agreed that certain chief complaints, prehospital interventions, and outcomes measures could potentially be used to characterize medical necessity in emergency medical services. While finding that ED diagnosis was a satisfactory outcome measure, The Neely Conference expert panel thought that expert opinion and hospital admission were not good criteria to measure triage accuracy.[25] But Patterson and Moore found that assessment of appropriateness based on ED diagnosis was limited by interrater agreement.[26] The current study found that both hospital admission and ED physician agreement are associated with transport method. Although our overall kappa indicates quite a good correlation, it is likely that there is room for improvement. Decreasing unnecessary transports would affect a greater proportion of patients but decreasing unmet need (by increasing ambulance transport of patients who require it) may have a greater clinical impact.

Many EMS systems have begun to implement dispatch and field triage rules to detect and prevent unnecessary transports.[27] Yarris et al. notes that a considerable percentage of patients transported by emergency ambulance would consider other means of transport as well as destinations other than the emergency department.[28] In Australia, the conversion from direct patient transport fee to a universally applied ambulance levy was associated with increased use by younger, less acutely ill, and less likely to be admitted patients.[11] A recent Japanese study indicated that implementing a user charge of $190 would reduce ambulance calls by patients with nonserious conditions without reducing calls by persons with serious conditions.[29]

We believe that a large multicommunity study would be necessary to accurately assess patterns of current ambulance utilization and to develop a truly evidence-based policy.

Limitations

There were limitations with data collection and analysis. For instance, while we did identify in which language the survey was completed, we did not ask about the patient's primary language or self identified race/nationality. Despite attempting to control variability based on time of day and day of week, this survey was completed in a two-week period, limiting its generalizability to other periods of the year. Nor do we have any way of knowing if the patients surveyed during these four shifts are representative of our overall ED population.

Seventeen USERS and 61 NONs cited "other" reasons for their transport choice. It is unclear what these "other" reasons were. In addition, while chief complaints were abstracted directly from the chart, they were grouped for analytical purpose by the single data collector, with no effort made to assess agreement among other authors.

Perhaps the greatest limitation of our study is its generalizability to other systems. Although our mixed suburban/small urban demographic is fairly representative of many prehospital systems, the applicability of our findings to urban and rural settings is problematic. For example, 80% of our population had insurance. Although we did not ascertain whether this was Medicaid, Medicare, or privately purchased plans, this may mean that our demographic is different from that of urban settings.

Our prehospital EMS system also is a combination of for- profit companies and volunteer services that are funded primarily by direct insurance billing, but it also includes township subsidies, specific contracts with various insurance companies, and annual subscriptions that enable a patient to be transported without costs outside of insurance reimbursement. Patient awareness of cost and the impact of ambulance charges on transport choice may vary from community to community.

CONCLUSIONS

Ambulance users were more likely to be more sick by all measured parameters than nonusers. Although there is room for improvement, patients frequently make the appropriate decision for usage of an ambulance.

References

1. EMS System Act of 1973, Public Law 93-154, Washington DC, 1973.
2. Gibson G. Measures of emergency ambulance effectiveness: unmet need and inappropriate use. JACEP. 1977;6:389–92.
3. Burt CW, McCaig LF, Valverde RH. Analysis of ambulance transports and diversions among US emergency departments. Ann Emerg Med. 2006;47:317–26.
4. U.S. census, 2000.

5. Fleiss JL. Measuring nominal scale agreement among many raters. Psychol Bull. 1971;76:378–381.
6. Cadigan RT, Bugarin CE. Predicting demand for emergency ambulance service. Ann Emerg Med. 1989:18:618–21.
7. Maio RF, Tedeschi P, Swor R, Krohmer J, Ferrel R, Jacques DL. Regional variation of nonrural pediatric ambulance transport rates: An ecological study. Pediatr Emerg Care. 1996;12(4):277–82.
8. Rucker DW, Edwards RA, Burstin HR, O'Neil AC, Brennan TA. Patient-specific predictors of ambulance use. Ann Emerg Med. 1997;29:484–91.
9. Clark MJ, Purdie J, FitzGerald GJ, Bischoff NG, O'Rourke PK. Predictors of demand for emergency prehospital care: an Australian study. Prehosp Disast Med. 1999;14(13):167–73.
10. Svenson JE. Patterns of use of emergency medical transport: a population based study. Am J Emerg Med. 2000;18:130–4.
11. Ting JST, Chang AM. Path analysis modeling indicates free transport increases ambulance use for minor indications. Prehosp Emerg Care. 2006;10:476–81.
12. Richards ME, Hubble MW Crandall C. Influence of ambulance arrival on emergency department time to be seen. Prehosp Emerg Care. 2006;10:440–46.
13. Nemer JA, Tallick SA, O'Connor RE, Reese CL. Emergency medical services transport of patients with headache: mode of arrival may indicate serious etiology. Prehosp Emerg Care. 1998;2:304–7.
14. Kost S, Cronan K, Gorelick M, Arruda J. Ambulance use by high-acuity patients in a pediatric ED. Am J Emerg Med. 2000;18:679–82.
15. Brown E, Sindelar J: The emergent problem of ambulance misuse. Ann Emerg Med. 1993;22:646–50.
16. Billittier AJ, Moscati R, Janicke D, Lerner EB, Seymour J, Olsson D. A multisite survey of factors contributing to medically unnecessary ambulance transports. Acad Emerg Med. 1996;3:1046–52.
17. Palazzo FF, Warner OJ, Harron M, Sadana A. Misuse of the London ambulance service: how much and why? J Accid Emerg Med. 1998;15:367–70.
18. Camasso-Richardson K, Wilde JA, Petrack EM. Medically unnecessary pediatric ambulance transports: a medical taxi service? Acad Emerg Med. 1997;4(12):1103–6.
19. Gibson G: Evaluative criteria for emergency ambulance systems. Soc Sci Med. 1973;7:424–54.
20. Webb SB Jr, Christoforo J: The use and misuse of ambulance services by the population using the emergency department at the Hospital of St. Raphael. Conn Med. 1974;38:195–7.
21. Morris DL, Cross AB. Is the emergency ambulance services abused? Br Med J. 1980;281:121–3.
22. Gerson LW, Skvarch L. Emergency medical service utilization by the elderly. Ann Emerg Med.1982;11:610–2.
23. Hammond J, Gomez GA, Fine E, Eckes J, Castro M. The non-use of 9-1-1: private transport of trauma patients to a trauma center. Prehosp Disast Med. 1993;8(1):35–8.
24. Meischke H, Ho MT, Eisenberg MS, Schaeffer SM, Larsen MP. Reasons patients with chest pain delay or do not call 911. Ann Emerg Med. 1995;25:193–7.
25. Mann NC, Schmidt TA, Cone DC. Defining research criteria to characterize medical necessity in emergency medical services: a consensus among experts at the Neely Conference. Prehosp Emerg Care. 2004;8:138–53.
26. Patterson PD, Moore CG, Brice JH, Baxley EG. Use of ED Diagnosis to Determine Medical Necessity of EMS Transports. Prehosp Emerg Care. 2006;10:488–93.
27. Zalenzki R. Accuracy of an out-of-hospital triage rule to detect unnecessary emergency medical service transports. Ann Emerg Med. 2000;S19.
28. Yarris LM, Moreno R, Schmidt TA, Adams AL, Brooks HS. Reasons why patients choose an ambulance and willingness to consider alternatives. Acad Emerg Med. 2006;13:401–5.
29. Ohshige K, Kawakami Chihiro, Kubota K, Tochikubo O. A contingent valuation study of the appropriate user price for ambulance service. Acad Emerg Med. 2005;12:932–40.

Appendix 1.

PATIENT SURVEY: Age: M/F

1. Highest grade of school completed (if college or higher, please write 13): ____
2. How did you arrive at the Emergency Department?
   a. Ambulance (go to question 3)
   b. Bus (go to question 4)
   c. Private automobile (go to question 4)
   d. Taxi (go to question 4)
   e. Walked (go to question 4)
   f. Other (go to question 4)
3. Why did you arrive at the Emergency Department via an ambulance? Please circle all that apply.
   a. I was too sick to go any other way.
   b. I thought an ambulance would be the quickest way to come.
   c. Someone else called the ambulance for me.
   d. I thought I would be seen quicker if I came via an ambulance.
   e. I could not afford to come any other way.
   f. I was too scared to come any other way
   g. I had no other way of coming to the Emergency Department.
   h. My Doctor told me to come via ambulance.
   i. Other
4. Why did you **not** come to the Emergency Department via an ambulance? Please circle all that apply.
   a. I did not think of calling 911.
   b. I thought an ambulance would take longer.
   c. I was not sick enough to come via ambulance.
   d. I was embarrassed to come by ambulance.
   e. I had someone else to bring me.
   f. I could not afford to come via ambulance.
   g. I was scared to come by ambulance.
   h. The ambulance would have taken me to the wrong hospital.
   i. Ambulances should be reserved for patients sicker than myself.
   j. My Doctor told me not to come via ambulance.
   k. Other.
5. How much did/would the ambulance ride cost?_____
6. How sick or badly injured did you think that you were when you decided to come to the Emergency Department?

1 2 3 4 5

Deathly Ill / Injured Not very Ill / Injured

Appendix 2.

PATIENT SURVEY: For the attending or resident physician:

1: In your opinion, should the patient have been transported to the hospital via 911 ambulance? YES NO

2: What was the disposition of this patient?
   a. Discharged
   b. Admitted or transferred to another hospital
   c. Deceased

3. Discharge Diagnosis (physician note): _____