

## **UC Irvine**

### **Western Journal of Emergency Medicine: Integrating Emergency Care with Population Health**

#### **Title**

Severe Traumatic Brain Injury: Stabilization or Definitive Care

#### **Permalink**

<https://escholarship.org/uc/item/9c37627w>

#### **Journal**

Western Journal of Emergency Medicine: Integrating Emergency Care with Population Health, 8(3)

#### **ISSN**

1936-900X

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#### **Publication Date**

2007

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## 12 Emergency Department Length of Stay and Predictive Demographic Characteristics

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**Objectives:** Emergency department (ED) crowding continues to be a significant national concern. However, there is a paucity of data on the disparities in length of stay (LOS) by ethnicity and insurance coverage. We sought to identify associations between LOS and patient demographic characteristics, using three years of a nationally representative database.

**Methods:** Retrospective cohort study. We used data from the 2002 to 2004 National Hospital Ambulatory Medical Care Survey (NHAMCS), a nationally representative database containing information on ED patients, their diagnosis, and length of stay. Our empirical approach accounted for hospital-specific differences, adjusted for the number of procedures and diagnoses for each patient (as a proxy for patient complexity), and included data on day-of-week (as a proxy for typical ED flow).

**Results:** From 2002 to 2004, NHAMCS collected data on 114,179 ED visits, representing a weighted estimate of 334.3 million national visits over three years. Mean LOS for discharged patients was 167.4 minutes (95% CI 162.1-172.8); patients admitted to the hospital had a mean LOS of 363.4 minutes (95% CI 338.4-388.3). After adjusting for patient severity and individual hospital effects, longer LOS was associated with nonwhite patients (an additional 10.6 minutes, 95% CI 4.0-17.1) and patients who were uninsured (an additional 8.7 minutes, 95% CI 1.4-15.9). Moreover, differences in LOS are primarily attributable to the portion of time spent in the ED waiting to see the emergency physician. For example, compared to white patients, nonwhite patients waited 5.4 minutes longer (95% CI 3.4-7.4) to see a physician.

**Conclusions:** Disparities exist in ED LOS, with nonwhite and uninsured patients experiencing longer lengths of stay. Interventions to reduce ED crowding should consider efforts that aim to reduce wait times for underserved populations.

## 13 Hand Surgeons' Perceived Barriers and Solutions to Emergency Call

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**Objectives:** Sub-specialty shortages are a growing threat to public healthcare. Surveyed emergency physicians and administrators cite the difficulties of liability, costs, and lack of reimbursement. Our study explores hand surgeons' perceived barriers and potential solutions to taking call.

**Methods:** An IRB-approved, anonymous electronic survey

was sent to the American Society of Surgery of the Hand list serve. Respondents ranked perceived obstacles (payment, liability, lifestyle, and inconvenience) and potential solutions (fixed payment per call, reimbursement rate per patient, and liability assistance). Respondents listed specific requirements to do more call. Comments were solicited qualitatively.

**Results:** 614/2054 (30%) of surveys were returned. Respondents varied by location, practice type, and call coverage. Barriers cited were lifestyle (42%), dumping (11%), uninsured patients, and liability concerns (10% each). The preferred incentive was pay-per-call (58%), followed by a guaranteed reimbursement per patient (27%). Results did not significantly vary by geographic location. Respondents gave 632 qualitative comments, calling for improved management and referrals (48%), prevention of dumping (12%), availability of rooms and staff (11%), and earlier triage/consultation (3%). Eighty-three percent would increase call for money. Fifty percent would take more call for \$1500/night, 150% of Medicare reimbursement guaranteed-per-patient, or \$45,000/year in liability assistance.

**Conclusions:** Hand surgeons' barriers to call were lifestyle, dumping, and financial concerns. Professional and personal frustrations were evident in the qualitative analysis. Respondents called for defining appropriate referrals. Fixed pay-per-call was the preferred incentive. \$1,500/night, 150% of Medicare reimbursement guaranteed, or \$45,000/year of liability assistance would increase coverage 50%. Our survey is a novel step focused on hand surgeons. Further research should explore incentives, mandates, and standardized protocols in other specialties.

## 14 Severe Traumatic Brain Injury: Stabilization or Definitive Care

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**Objectives:** We conducted this study to determine whether there is a mortality reduction conferred by direct transport to the trauma center from the scene when compared with inter-facility transfer (IFT).

**Methods:** This is a retrospective cohort study of all patients over the age of two who suffered a traumatic head injury and were transported across county lines to a regional Level I trauma center for neurosurgical care between January 2002 and November 2006. Patients with suspected TBI resulting in a GCS less than 9 were included. Patients were stratified according to whether they were directly transported (DT) from the field or via IFT after initial stabilization and resuscitation at a Level III trauma center. Data obtained from the trauma registry included patient demographics including age, sex, and race, time of ambulance arrival, mechanism of injury, initial

vital signs, GCS, patient disposition from ED and final clinical outcome. Logistic regression and chi-square statistics were applied to compare mortality rates between the two groups.

**Results:** A total of 94 IFT and 379 DT cases were studied. Cases were matched according to GCS. The median time for direct transport was 26 minutes while the median time of IFT was 151 minutes. A total of 77.7% of all patients arriving by IFT survived to discharge compared with 71.2% of DT patients ( $p=0.21$ ). The odds ratio for survival (IFT/DT) was 1.40. The logistical regression demonstrated a small but statistically insignificant contribution to survival for each additional stabilization minute for patients from an IFT.

**Conclusions:** Direct transport to a neurosurgical-capable trauma center from the scene for patients with GCS less than 8 does not confer a survival benefit when compared with patients taken to the nearest hospital before IFT. We recommend that pre-hospital triage guidelines include provisions for initial stabilization at a Level III center in lieu of mandatory transport to the regional Level I trauma center.

### 15 Prophylactic Antibiotics for Dog Bites: A RCT with Refined Cost Model

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**Background:** The use of prophylactic antibiotics remains controversial with conflicting results from a meta-analysis and Cochrane review.

**Objectives:** 1) Determine estimates of outcomes from dog-bite wounds comparing current treatment with and without antibiotics. 2) Use these estimates in a cost model to generate treatment recommendations.

**Methods:** A two-center randomized double blind placebo controlled trial comparing amoxicillin/clavulanic acid vs. placebo considered all dog bites, regardless of site. We excluded immunosuppressed patients, those with penicillin allergy and wounds > 12 hours old and those with suspected neurovascular, tendon, joint or bone injury. Patients were randomized to treatment, and structured follow-up was done after 14 days to determine the presence of a wound infection. Continuous data were compared with t-test and categorical data with chi square analysis. Data generated with 95%CI were then used in a cost model and a sensitivity analysis done to determine thresholds for treatment.

**Results:** We considered 230 consecutive dog bites, 146 were eligible, 6 were missed, 33 refused, and 97 consented to participate. Seventy-two percent were non facial, 62% were full thickness and 14% were sutured. There were no differences in demographic or clinical characteristics between the groups. Overall infection rate was 2% (95% CI 0-7%), none in the

antibiotic group 0% (95% CI 0-6%) and 2 in the placebo 4.5% (95%CI 1-15%). Both infected wounds were sutured and on the face. The cost model determined antibiotics would always be cost effective when the infection rate was greater than 5% and never be cost effective if the rate was < 3%.

**Conclusion:** Our infection rate was much lower than older studies. Antibiotics consistently show a trend towards benefit and our model recommends treating any wounds at greater than 5% risk of infection. Further research should focus on the current infection rate of dog bites and identifying factors associated with high risk wounds, not on the benefits of antibiotics.

### 16 Ski Patrollers: Reluctant Role Models for Helmet Use

Bruce Evans, MD; Jack Thomas Gervais; Laura Sehnert, MD; Morgan Valley, MS; Steven Lowenstein, MD, MPH.

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**Objectives:** Ski helmets reduce the risk of brain injury, but helmet use is low. Ski patrollers (SPs) could serve as role models for helmet use, but little is known about their practices and beliefs. We studied: The frequency of helmet use by SPs; reasons for non-use; and beliefs predictive of helmet use.

**Methods:** A survey was completed by a convenience sample of SPs attending conferences. Questions addressed helmet use, head injury experience (self, family, friends) and knowledge of helmets and injury risk reduction. Helmet use was defined as "100% use during patrol skiing." To assess predictors of helmet use, odds ratios and 95% confidence intervals were calculated, after adjusting for seasons skied.

**Results:** Among 93 SPs, most were men (79%), < 45 years old (70%) and experienced (mean seasons skied =  $26 \pm 11$ ). Helmet use was 21% (CI95 = 14-31). Common reasons for non-use were hearing (35%), comfort (28%) and vision (24%); only 16% cited "socially unacceptable." Most SPs believed helmets prevent injuries (90%) and that SPs are role models (93%). Head injury experience was common (23%). However, many SPs believed helmets encourage reckless skiing (39%) and increase injury risks (16%). Four factors predicted helmet use: head injury experience (9.8; 1.02-94); perceived exposure protection (OR = 9.7; CI95 = 3.1-29.8); belief that role modeling is an advantage of helmets (3.5; 1.1-10.6); and belief that helmets encourage reckless skiing (.17; .03-.83).

**Conclusions:** Although based on self-reports by a small convenience sample of SPs, these data suggest there is discordance: SPs are convinced that helmets reduce serious injury and that they are role models, but most do not wear helmets regularly. Manufacturers should address helmet design and comfort. Education programs should include head injury cases, address the belief that helmets encourage recklessness (risk homeostasis) and stress role modeling as a professional responsibility.