

Time-trend Analysis of Patient Transfers to a Neurosurgical Service at a Tertiary Care Facility in the Southeastern United States David LaBorde MD; Jaskaran Rakkar BS; Nathaniel Bloodworth BS Emory University, Department of Neurosurgery

Georgia Institute of Technology, Department of Biomedical Engineering

Introduction

Tertiary acute care hospitals (TACH) staffed with neurosurgeons are a critical resource. TACHs are often centers of last resort for patients in need of urgent or emergent neurosurgical intervention when they present to hospitals in the community without neurosurgical coverage. This analysis examines neurosurgical transfers to a large TACH in the southeast with 24 hr neurosurgical coverage 7 days per week. Herein factors are examined which may affect transfer volumes to this accepting facility (AF), including distance to the AF, month, and arrival time.



studied are shown.

Methods

Deidentified AF transfer center data from 11/2009 to 01/2011 was examined retrospectively. Transfer date and time, volumes, and the identity of the instate referring hospitals (RHs) were examined. RHs were ranked by volume and divided into 5 tiers. Tier 1 RHs sent the highest number of patients and Tier 5 RHs sent the least. Driving distances were computed. ANOVA and Tukey-Kramer testing determined significance.

Results

1,050 patients were sent to the AF by 85 RHs during the time period analyzed. 57% and 82% of transfers came from Tier 1 and Tiers 1-2, respectively. Tier 1 RHs were significantly closer (p<0.05) to the AF than all other groups except for Tier 2 RHs. The proportion of annual transfers by month ranged from a high of 9.8% to a low of 7.4% in October and April, respectively. The AF received significantly fewer numbers of transfers between 00:00 and 07:59 hours versus 12:00 and 23:59 hours (p<0.05).



Impact of distance on the percentage of total transfers to AF. Numbers above the error bars denote statistical significance to the respective Tier.



EMORY

Impact of the time of day on the number of transfers to AF Numbers above the error bars denote statistical significance to the respective Tier.

Conclusions

A framework for analyzing neurosurgical patient transfers to TACHs is presented. Results indicate that the majority of neurosurgical patient transfers (>80%) came from RHs close (< 50 miles) to the AF during the hours of 12:00 and 19:59. This may have implications for staffing levels, managing relationships with top RHs, and investing in health information exchange.

Learning Objectives

By the conclusion of this session, participants should be able to:

- Describe methods for analyzing patient transfer volumes to institutions with a neurosurgeon on call at all times.
- Discuss and quantify factors that impact the patient transfer volumes during inter-hospital transfers.
- Utilize the findings from this investigation to develop models that may help optimize transfer protocols.