

UC Irvine

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

Title

Expanding Stroke Screening for EMS Patients with Altered Mental Status: A Predictive Model Analysis

Permalink

<https://escholarship.org/uc/item/80n340xw>

Journal

Western Journal of Emergency Medicine: Integrating Emergency Care with Population Health, 27(5)

ISSN

1936-900X

Authors

Joseph, Joslyn
Neyman, Gregory
Greenberg, Simcha
[et al.](#)

Publication Date

2026-09-25

DOI

10.5811/westjem.66616

Copyright Information

This work is made available under the terms of a Creative Commons Attribution License, available at <https://creativecommons.org/licenses/by/4.0/>

in the department was chosen, with 2 months for baseline data collection, 1 month for data sharing and impact measurement and 1 month to see if activity returned to baseline to assess whether a Hawthorne Effect existed.

Qualitative analysis was done by means of an electronic survey sent to all ED clinicians. This was done with statements expressed on a Likert scale and some free text responses.

Results: Sharing activity data with clinicians increased the average number of patients seen per clinician per shift by 0.65 months between 2 and 3. This was a statistically significant change ($p=0.001$). Month 4 is currently ongoing to see if there is a return to baseline.

Survey results showed negative clinician perceptions on the sharing of activity data with the vast majority stating that it would have a negative impact on staff, with no change to the way or speed by which they work.

Conclusions: Sharing activity data with clinicians increases the number of patients that they see per shift on average. However, this is a modest increase relative to the potential negative impacts upon staff morale and working conditions.

Clinicians were of the perspective that knowledge of the data would not alter their practice, which conflicts with the reality which shows an increase in the number of patients seen on average per shift.

6 Expanding Stroke Screening for EMS Patients with Altered Mental Status: A Predictive Model Analysis

Joslyn Joseph, Gregory Neyman, Simcha Greenberg

Background: Stroke is a time-sensitive emergency in which early recognition and treatment significantly impact outcomes. Emergency Medical Services (EMS) play a vital role in early identification and hospital triage. EMS providers often determine transport destinations based on clinical impressions, protocols, and stroke center capabilities. Altered mental status (AMS) is a common reason EMS providers may miss acute ischemic strokes, but the value of performing stroke scales in all AMS patients remains unclear.

Objectives: This study assesses the utility of stroke screening in EMS patients with AMS by developing a predictive model based on stroke scale assessments and clinical factors.

Methods: We analyzed the 2022 National Emergency Medical Services Information System (NEMSIS) dataset, focusing on cases with AMS (ICD-10 code R41.82) as a primary or secondary symptom. Logistic regression models were applied to runs where a stroke scale was performed, incorporating demographics, vitals, response acuity, protocols, and symptoms. Two models—one for “Positive” and another for “Positive/Non-conclusive” stroke scales—were used to

estimate outcomes for AMS patients not screened.

Results: AMS accounted for 10% of EMS stroke impressions. Among 1,973,095 AMS runs, 407,556 (20.7%) included stroke scale assessments, with 19.1% positive and 21.2% non-conclusive. Strong predictors included hemiplegia (OR 14.67), stroke symptoms (OR 13.26), and speech disturbances (OR 5.58). The model estimated a 13.5% probability of a positive stroke scale in unscreened AMS patients.

Conclusion: Routine stroke scale use in AMS patients may enhance stroke detection and triage. Future studies should incorporate hospital-confirmed outcomes and explore barriers to EMS stroke scale use.

7 Current State of Emergency Department Boarding: A Call to Reimagine Resources to Meet Patient Needs

Christine Chien, Peter Vajda, Howard Klausner, Namita Jayaprakash, Seth Krupp, Mit Patel, Jo Ann Rammal, Victoria Al Karaki, Jennifer Stevenson, Steven Rockoff, Dmitry Davydov, Satheesh Gunaga, Jennifer Stephens-Hoyer, Solomon Knicely, Jason Vieder, Anthony Cruz, Gust Bills, Jacob Sinkoff, Megan Cahill, Heather Cronovich, Anthony Colucci, Brittany Betham

Background: Emergency Departments (EDs) are experiencing an unprecedented increase in boarding patients which is impacting the ability to provide efficient and safe patient care. While this issue is recognized in tertiary care hospitals, it remains less explored in community and freestanding EDs.

Objectives: The objective of this study is to explore the relationship between annual patient visits and patient hours of care provided in EDs. We hypothesize that despite decreasing annual patient visits, more hours of patient care are being provided.

Methods: The electronic health record (EHR) in a Michigan health care system with 9 Emergency Departments were analyzed for 2018 and 2023. These include: 1 tertiary care hospital, 4 community EDs and 4 free standing EDs. Metrics included Total Annual Patient Volume, Daily census, and daily Patient Hours of Care (PHC). A descriptive analysis was used to identify trends and differences when comparing 2023 to 2018, in these different types of EDs.

Results: For community EDs, total annual volumes decreased from 244,753 in 2018 to 228,896 in 2023, while PHC increased from 2,944 to 3,810. Freestanding EDs saw a slight decline in total annual volume, from 129,547 in 2018 to 128,156 in 2023, but daily PHC rose from 845 to 1,041. The tertiary care hospital ED experienced the most pronounced decline in total annual volume, from 101,210 in 2018 to 84,792, yet daily PHC significantly increased from 1,601 to