

Emergency Department Visits for Stroke in the United States: National Hospital Ambulatory Medical Care Survey

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Background: Emergency care is an essential part of acute stroke care. This study examined characteristics of emergency department (ED) visits with a first-listed diagnosis of stroke in the US.

Methods: The National Hospital Ambulatory Medical Care Survey is a national survey of visits to emergency and outpatient departments of non-Federal, short-stay, and general hospitals in the United States. ED visits with a physician's primary diagnosis of stroke (ICD9CM 430-434, 436-438) were included in the analysis. We examined characteristics of ED visits for stroke in 2003 and 2004, including chief complaints, waiting time and receipt of MRI/CAT. Multiple linear regression and logistic regression were used to analyze factors related to waiting time and receipt of MRI/CAT, respectively. Survey design methods were employed to provide national estimates.

Results: Approximately 408,000 ED visits (0.4% of all ED visits) were related to a diagnosis of stroke each year. Among them, 10.2% were ischemic, 13.2% were hemorrhagic, 74.6% were ill-defined and 2.0% were late effects of stroke. Matching the chief complaints with the major signs of stroke, we found that numbness or weakness of the face, arms or legs accounted for 18.6% of the visits, followed by confusion or trouble speaking (14.0%), trouble walking, dizziness or loss of balance or coordination (9.8%) and headache (5.6%). Average waiting time to see a physician was 35.1 (se=3.2) minutes. Among stroke ED visits, 39.5% arrived via ambulance and 44.1% were classified as urgent (should be seen <15 minutes). Older age and non-Metropolitan Statistical Areas (MSA) were related to longer waiting times while arrival via ambulance and urgent cases were associated with shorter waiting times ($p<0.05$). MRI/CAT was used among 74.0% of stroke ED visits. Living in a non-MSA area significantly decreased the probability of receiving MRI/CAT ($p<0.05$). The majority (80.3%) were admitted to hospital; 8.2% were transferred from ED to other hospitals.

Conclusions: Presentations of stroke patients in ED vary and some can be general. A high percentage of stroke patients were diagnosed as "ill-defined" in ED. A longer waiting time for certain demographic subgroups and suboptimal utilization of MRI/CAT presents opportunities to improve acute stroke care in ED in the future.