

Analyzing Stroke Alert Activations and the Correlation with a True Stroke Diagnosis.

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Introduction/Background/Objectives:

Stroke is a potentially lethal diagnosis and is associated with significant morbidity and mortality for patients. Treatment is time-dependent and every minute that a brain is infarcting is 1.9 million neurons lost. Every second counts during with a working stroke diagnosis. Because of this stroke recognition and field triage is paramount. Hospitals and EMS agencies have developed various versions and protocols revolving around “Stroke Alerts” or “Code Strokes” to swiftly triage and mobilize resources to provide swift care to these patients. The risk of missing a stroke due to possible under-triaging can be disastrous and life changing. Alternatively, “Over-triage” can burden limited resources and understaffed Emergency Departments (ED) across the country. Additionally, it can also result in personnel fatigue of those healthcare providers and support staff involved. Studying the patterns, local and regionally, around the activation of “Stroke Alerts” with ongoing quality review addresses this conundrum

Methods:

This was a prospective observational study of all stroke alerts, collected as a part of our Comprehensive Stroke Center Quality Registry. A stroke alert could be called by Emergency Medical Services (EMS) or any personal in the ED. EMS most often used the BEFAST scale for determining a Stroke Alert. The final diagnosis was classified as either Intracerebral Hemorrhage (ICH), Acute Ischemic Stroke (AIS), Transient Ischemic Attack (TIA), or was coded “not a stroke” if none of the above. This study was approved by our institutions IRB.

Results:

Our stroke population was 48% female, with a median age of 70 (IQR 58-79 years). White males made of 67% of the cohort, Hispanic 31%, Black 14%, Asian 3% and the remainder were mixed race.

In the year 2020 there was a total of 1606 stroke alerts. Of these, 936 (58.3%) were either an ICH, AIS or TIA, meaning that 41.7% were not a stroke. In the year 2021 the number of stroke alerts outpaced the number of actual strokes of TIAs. There were a total of 1897 stroke alerts of which 922 (48.6%) were either an ICH, AIS or TIA, meaning that 51.4% were not a stroke. Figure 1 demonstrates the numbers for years 2020 and 2021 for each month with no seasonal trend noted.

Conclusion:

More than half the stroke alerts in our institution were not ultimately diagnosed as a transient ischemic attack, ischemic or hemorrhagic stroke. This data can be helpful to refine and streamline the triage process and in turn help with the costly effects for families, patients and health care institutions that accompanies an inappropriate stroke alert activation and subsequent hospital stay. It can also help to promote ongoing education for health care personnel and first responders in their stroke assessments.

Figure 1: Frequency comparison of Stroke alerts vs. Strokes and TIAs.

