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### Symptom Screening Improves Accuracy of the FAST-ED Scale

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## INTRODUCTION

The Field Assessment Stroke Triage for Emergency Destination (FAST-ED) scale was developed to detect large vessel occlusion strokes and to address the time-sensitive nature of endovascular interventions. Miami-Dade Fire Rescue implemented this scale in March 2017 to bypass directly to a Comprehensive Stroke Center when a FAST-ED scores  $\geq 4$  and to field activate the endovascular team for scores  $\geq 6$ .

## PURPOSE

We sought to determine whether a stroke alert with FAST-ED  $\geq 4$  could be more accurately assessed as ischemic stroke (CVA) if cases with symptoms of increased intracranial pressure (ICP) were excluded. With a more accurate field diagnosis, physicians can make quicker and better decisions on the most appropriate treatment and care.

## METHODS

Data were analyzed from patients with FAST-ED  $\geq 4$  who were brought to Baptist Hospital via EMS from March-September 2017. Cases were stratified by discharge diagnosis: CVA, intracerebral hemorrhage (ICH), subarachnoid hemorrhage (SAH), transient ischemic attack (TIA), and stroke mimics (SM). Prevalence of symptoms of increased ICP, such as headache, nausea, vomiting, and degrees of altered mental status was examined in each stroke type. Proportions of stroke types were compared before and after exclusion of cases with these symptoms to determine which factors could lead to a more accurate field diagnosis of CVA.

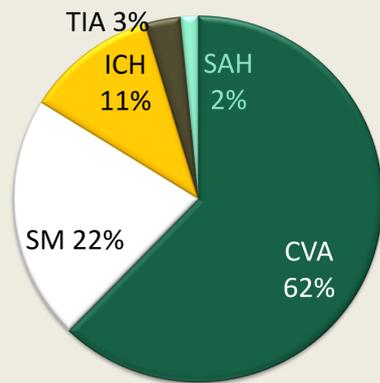


Figure 1. There were 350 stroke alerts from EMS, 275 had a FAST-ED documented, and 130 had FAST-ED  $\geq 4$ . Percent of stroke types out of 130 EMS stroke alerts with FAST-ED  $\geq 4$ .

## RESULTS

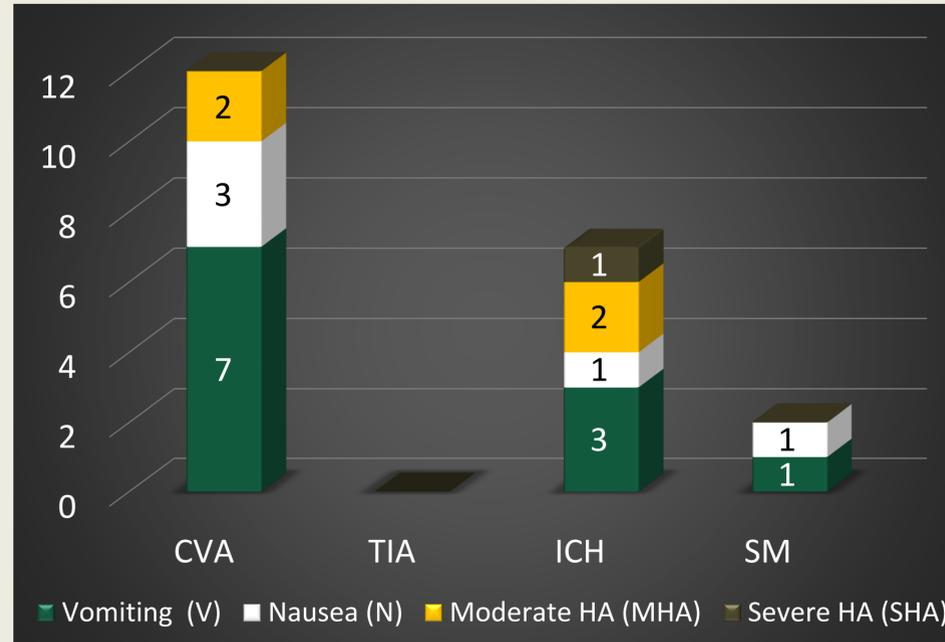


Figure 2. Frequency of symptoms of increased ICP across stroke types.

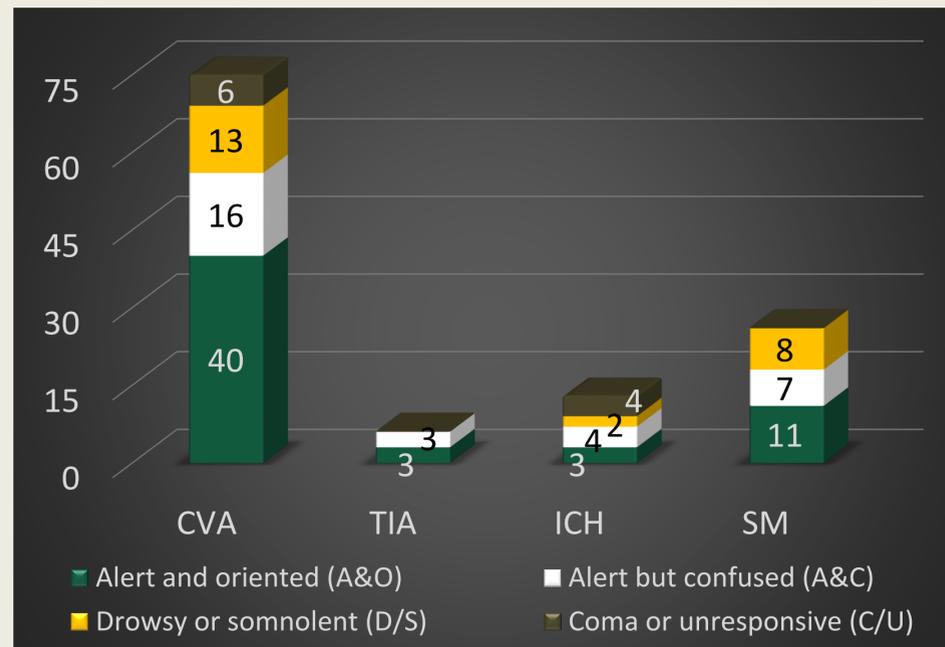


Figure 3. Frequency of levels of mental status across stroke types.

## RESULTS (cont'd)

- 2 cases of SAH were excluded from analysis because of low volume and 5 cases were excluded because accurate mental status was not documented
- When cases with symptoms of increased ICP were excluded, relative proportions of CVA vs. ICH were not statistically significantly different from the original proportions ( $\chi^2 = 0.069$ ,  $p > 0.05$ ).
- Relative risk (RR) was calculated as the probability of identifying a CVA when cases with specific symptoms were excluded vs. the probability of identifying a CVA without exclusion.  $RR \approx 1$  signifies no difference in risk.

Symptoms	N	V	MHA	SHA	A&O	A&C	D/S	C/U
Relative Risk	1.001	0.998	1.014	1.008	<b>0.877</b>	1.043	1.020	1.012

Table 1. RR for identifying CVA when cases with these symptoms were excluded vs. no exclusions.

- RR decreased when patients with A&O were excluded ( $RR = 0.88$ ,  $CI_{95} 0.69-1.12$ ),  $p > 0.05$ ).

## CONCLUSIONS

Symptom exclusion did not improve the ability of FAST-ED to detect CVA. In fact, cases where patients are A&O are likely to have a CVA, therefore A&O should not be used as an exclusion to improve FAST-ED. In fact, one should not underestimate the severity of a potential stroke in A&O patients, because they could still be candidates for endovascular therapy. We hypothesized that making changes to the FAST-ED based symptoms of increased ICP made sense in theory, but it did not work retrospectively. We recommend the FAST-ED protocol remain as-is unless new evidence emerges.