The Efficacy Of BE-FAST In Identifying Strokes

Henry Tan  
*Henry Ford Health System, HTan1@hfhs.org*

Adam Alexander  
*Henry Ford Health System, AAlexan7@hfhs.org*

Anu Gopalan  
*Henry Ford Health System, AGopala3@hfhs.org*

Caroline Hannon  
*Henry Ford Health System, CHannon1@hfhs.org*

Satheesh Gunaga  
*Henry Ford Health System, SGUNAGA1@hfhs.org*

See next page for additional authors

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Evaluating the Utility of BE-FAST at Identifying Strokes in a Community ED Triage

PRESENTED BY HENRY FORD WYANDOTTE HOSPITAL QI TEAM 2018:
ANU GOPALAN DO, ADAM ALEXANDER DO, HENRY TAN DO,
CAROLINE HANNON DO, SATHEESH GUNAGA DO
JARED PATEL OMS-III, DYLAN BERGEON OMS-III
Stroke Epidemiology

- #2 most common cause of death worldwide
- Estimated that there is 140,000 stroke deaths yearly
- By 2030, it is forecasted that about 1 in 25 Americans will have a stroke with it becoming the leading cause of adult disability
- Costs projected to more than double to approximately $184 billion USD by 2030
- Posterior circulation strokes
  - Ataxia, Balance, Coordination disruptions
  - Visual disturbances – diplopia, blurring, visual field loss
  - With/without classic stroke symptoms
    - Slurred Speech, Weakness, Facial Droop
FAST:
B is for Balance: Does the person have a sudden loss of balance?
E is for Eye: Has the person lost vision in one or both eyes?
F is for Face: Does the person's face look uneven?
A is for Arm: Is one arm hanging down?
S is for Speech: Is the person's speech slurred? Does the person have trouble speaking or seem confused?
T is for Time: Call 911 now!
BE-FAST Evidence

- **Study 1** Aroor et al\(^1\)
  - 736 patients with acute ischemic stroke
  - 104 (14.1%) had no FAST symptoms
  - 32 (4.4%) had no BE-FAST symptoms

- **Study 2** Guli et al\(^4\)
  - FAST failed to detect 38% of posterior cerebral strokes
  - Sensitivity of BE-FAST - 91%, FAST - 76%
  - Specificity of BE-FAST - 56%, FAST - 68%

- **Study 3** Werring et al\(^5\)
  - 216 patients with posterior circulation stroke
  - 60.6% with a posterior stroke had a FAST score of at least 1
  - 79.6% with a posterior stroke detected with BE-FAST

In all studies, BE-FAST was more sensitive, but less specific.
Methods

- 401 bed hospital
- 65,000 annual ED visits
- Primary Stroke Center
- BE-FAST screening implemented into triage
- Comparative time frame from two months pre/post implementation
## Population Characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Pre-Intervention</th>
<th>Post-Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code Strokes (n)</td>
<td>69</td>
<td>86</td>
</tr>
<tr>
<td>Age (yrs)</td>
<td>68.30</td>
<td>64.33</td>
</tr>
<tr>
<td>Women (%)</td>
<td>60.87</td>
<td>62.79</td>
</tr>
<tr>
<td>History of prior CVA (%)</td>
<td>36.23</td>
<td>34.88</td>
</tr>
<tr>
<td>History of AFib (%)</td>
<td>17.39</td>
<td>10.47</td>
</tr>
<tr>
<td>History of HTN (%)</td>
<td>71.01</td>
<td>70.93</td>
</tr>
</tbody>
</table>
## Study Outcomes

<table>
<thead>
<tr>
<th>Variable</th>
<th>Pre-Intervention</th>
<th>Post-Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code Strokes (n)</td>
<td>69</td>
<td>86</td>
</tr>
<tr>
<td>NIHSS at Arrival</td>
<td>4.258</td>
<td>2.462</td>
</tr>
<tr>
<td>Diagnosed stroke (n)</td>
<td>25</td>
<td>27</td>
</tr>
<tr>
<td>Diagnosed stroke(%)</td>
<td>36.23</td>
<td>31.40</td>
</tr>
<tr>
<td>Received tPA (n)</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>Received tPA (%)</td>
<td>15.94</td>
<td>15.12</td>
</tr>
<tr>
<td>Thrombectomy (n)</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Thrombectomy (%)</td>
<td>0</td>
<td>2.33</td>
</tr>
<tr>
<td>Mortality (n)</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Mortality (%)</td>
<td>0.06</td>
<td>0.02</td>
</tr>
</tbody>
</table>
## FAST vs BE-FAST

<table>
<thead>
<tr>
<th></th>
<th>FAST</th>
<th>BE-FAST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity</td>
<td>84% (63, 94)</td>
<td>96% (79, 100)</td>
</tr>
<tr>
<td>Specificity</td>
<td>30% (17, 45)</td>
<td>17% (9, 29)</td>
</tr>
<tr>
<td>PPV</td>
<td>40% (27, 55)</td>
<td>35% (24, 47)</td>
</tr>
<tr>
<td>NPV</td>
<td>76% (50, 92)</td>
<td>91% (57, 100)</td>
</tr>
</tbody>
</table>

- Prior to intervention: 29 (36.2%) had acute strokes and presented with ≥1 FAST criteria
- After intervention: 27 (31.4%) had acute strokes, 23 (85.2%) presenting with ≥1 FAST and 26 (96.30%) with ≥1 BE-FAST criteria
- Among the 3 additional strokes detected using ‘BE’ symptoms, 1 patient was given tPA
Sources


