ABCD2 Helps Predict Risk of Stroke After TIA

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By Myra Partridge [1]

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The new score will help clinicians determine whether patients who have had a TIA should be admitted to the hospital to undergo urgent interventions or evaluations to prevent stroke, said S. Claiborne Johnston, MD, PhD, assistant professor of neurology at the University of California, San Francisco, and adjunct investigator in the Division of Research, Kaiser Permanente Northern California in Oakland. Johnston collaborated with researchers from the Radcliffe Infirmary in Oxford, UK. The study appears in the January issue of Lancet.

Because treatment of patients after a TIA varies between institutions, Johnston hopes the ABCD2 score will set a precedent for treatment. "We had validated our own score in our local population, which might have created problems with competing scores," he said. "By working together, we came up with a single best score, validated in multiple diverse populations, and created a single, better standard."

THE BEST OF BOTH SCORES

The new ABCD2 score draws together elements of the California score, published in 2000 by Johnston's group, and the ABCD score, published in 2003 by Rothwell and colleagues, and derived from the Oxfordshire Community Stroke Project conducted through the Radcliffe Infirmary. While the California score had been developed to predict risk of stroke within 90 days after a TIA, the ABCD score predicted risk of stroke within 7 days after a TIA. The new ABCD2 score, which can predict risk of stroke within 2 days after a TIA, was shown to be more accurate than the previously tested scores.

In the 4799 patients who were tested using the new scoring system, the 2-day risk of stroke was 1.0% in the 1012 patients with a score of 0 to 3, who were deemed low-risk; 4.1% in the 2169 patients with a score of 4 or 5, who were considered at moderate risk; and 8.1% in the 1628 patients with a score of 6 or 7, who were deemed at high risk.

These variables are important because risk of stroke after a TIA had been previously estimated at 4% to 20%, and half of these strokes usually occur within 2 days, according to Johnston. The study authors stressed that the 2-day risk of stroke after a TIA is therefore of greater clinical relevance than the 7- or 90-day risk because it determines whether the patient should be discharged or admitted. Overall, strokes occurred in 9.2% of patients within 90 days after a TIA, 7.5% at 30 days, 5.5% at 7 days, and 3.9% at 2 days.

The study authors pointed out that 85% of strokes occurred within 2 days after a TIA in patients who were not hospitalized. If these patients had been classified using the ABCD2 score, 66% would have been hospitalized and only 9% of the discharged patients would have had a stroke, according to the researchers.

Of 130 patients who had a stroke within 2 days of a TIA, 111 were not admitted to the hospital, although 45 of these patients had an ABCD2 score higher than 5. The authors point out that if all high-risk patients and moderate-risk patients had been admitted to the hospital, only 11 (9%) of patients who experienced stroke after TIA would not have been admitted.

Johnston said the original California and ABCD scores were very much alike: California included diabetes but not hypertension, while ABCD included hypertension but not diabetes. "That's why the new ABCD2 score includes both hypertension and diabetes, and both are independent predictors of 2-day outcomes," he said. The California score also was developed to predict stroke within 90 days, while the ABCD score was designed to predict stroke within 7 days.

The tool is easy for clinicians to use, since patients are assigned points for each risk factor, Johnston emphasized. "The score is super simple," he said. "Anyone can do it in his head, although he will
need to look up the stroke risks associated with a specific score." (Table).

### Table — ABCD Score

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age older than 60 years</td>
<td>1 point</td>
</tr>
<tr>
<td>Systolic blood pressure ≥ 140 mm Hg</td>
<td>1 point</td>
</tr>
<tr>
<td>Diastolic blood pressure ≥ 90 mm Hg</td>
<td>1 point</td>
</tr>
<tr>
<td>Unilateral weakness</td>
<td>2 points</td>
</tr>
<tr>
<td>Speech impairment without weakness</td>
<td>1 point</td>
</tr>
<tr>
<td>TIA duration ≥ 60 minutes</td>
<td>2 points</td>
</tr>
<tr>
<td>TIA duration 10 - 59 minutes</td>
<td>1 point</td>
</tr>
<tr>
<td>Diabetes</td>
<td>1 point</td>
</tr>
</tbody>
</table>

TIA, transient ischemic attack.

### CLINICAL APPLICABILITY

Johnston said he has begun using the new ABCD² score system in his clinical practice. "We are admitting all those with a score higher than 3, and those with scores from 0 to 3 are worked up in the emergency department and are discharged—unless there is some other reason to admit them," he said.

Physicians who want to learn more about the new system have begun to contact him. Calls have come from all over the world, including from Cuba, Slovakia, and Iran. "It's interesting to note how troubling TIAs are to physicians in a variety of health care settings," Johnston said. He and his colleagues are now working to integrate imaging findings with the new ABCD² score. They also are planning a study to evaluate how its use affects care in hospitals.

### REFERENCES


Links:
[1] [http://www.diagnosticimaging.com/authors/myra-partridge](http://www.diagnosticimaging.com/authors/myra-partridge)