

Hospital Peer Review

July 2010

Hospital Peer Review is a monthly newsletter sponsored by the Rural Healthcare Quality Network to alert Critical Access Hospitals regarding findings from the Peer Review Program. Summarized are a few of the key findings and best practices that would be helpful for other critical access hospitals to be knowledgeable about. This newsletter is edited by Myron Bloom, Medical Director and he can be reached at drmbloom@msn.com.

Stroke After TIA

The ABCD² score has been internationally endorsed as a simple method for identifying patients who have had a transient ischemic attack (TIA) who are at high risk for early stroke, need an expeditious workup, and may require admission.

Working together, Kaiser Permanente (California Score) and Oxford (ABCD Score) validated their two similar prognostic scores in four independent groups of patients and generated a new unified score (the ABCD² Score) to predict the risk of stroke in the two days following a TIA. Data from the validation groups included 4,799 patients.

A – for age	60 years or older	1 point
B – for blood pressure	A systolic 140 mm Hg or greater or diastolic 90 mm Hg or greater	1 point
C – for clinical features	Unilateral weakness	2 points
	Speech disturbance without weakness	1 point
D – for duration of symptoms	Symptoms lasting greater than 60 minutes	2 points
	Symptoms lasting 10 – 59 minutes	1 point
	Symptoms lasting less than 10 minutes	0 points
D² – Diabetes		1 point
Risk of stroke at two days: Low risk (0-3 points): 1.0% Moderate risk (4-5 points): 4.1% High risk (6-7 points): 8.1%		

The prior ABCD score did not include Diabetes, resulting in a seven day risk of stroke of 0.4% for 0-4 points, 12.1% for 5 points, and 31.4% for 6 points. Patients with higher ABCD² scores also have significantly higher incidences of stroke at 7 days and 90 days. The score predicted 7-

day and 90-day stroke risk when investigators prospectively applied the score to 148 consecutive patients with TIA at three hospitals in Greece and Singapore. Patients with scores >2 were five times more likely to suffer stroke at 90 days than those with lower scores.

The following web site has an on line calculator for 2 day, 7 day and 90 day Stroke Risk:
<http://www.mdcalc.com/abcd2-score-for-tia>

As part of a prospective study of all strokes and TIAs in a population of 91,106 individuals in Oxfordshire, U.K. (the Oxford Vascular Study), researchers assessed the risk for stroke within 24 hours after a first TIA and the predictive value of the ABCD² risk scoring system.

Among the 488 patients with first TIAs from 2002 to 2007, the risk for stroke was 1.2% within 6 hours, 2.0% within 12 hours, and 5.1% within 24 hours. Of the 59 strokes that occurred within 30 days after TIA, 25 (42%) occurred within the first 24 hours. 19 of the 25 patients who had strokes within 24 hours had ABCD² scores ≥ 5 . Risk for stroke within 24 hours after TIA was 2.0% in patients with ABCD² scores ≤ 4 , 6.5% with scores of 5, 11.8% with scores of 6, and 33.0% with scores of 7. Similarly, patients with scores ≥ 5 had greater risk for stroke than those with lower scores within 6 hours (2.6% vs. 0.3%) and within 12 hours (4.7% vs. 0.3%). Although stroke risk correlates with the ABCD² score, even patients in the lowest risk ABCD² group had a 2% risk for stroke within 24 hours, which was felt sufficient to warrant an urgent evaluation.¹

Not only did the ABCD² score predict the early risk of stroke after TIA, it was predictive of the severity of recurrent events. In a prospective study, again in Oxfordshire, of 500 consecutive TIA patients, 55 had a recurrent TIA (11.0%; 95% CI, 8.3% to 13.7%) and 50 had a recurrent stroke (10.0%; 95% CI, 7.5% to 12.0%) within 7 days. The ABCD² score was highly predictive of major recurrent stroke, weakly predictive of minor stroke, and inversely related to risk of recurrent TIA. The score predicted stroke-related disability, length of stay for recurrent stroke, and hence, overall acute hospital care costs.²

The American Heart Association/American Stroke Association recommendation is that patients with scores >2 be observed in the hospital for urgent diagnostic evaluation and potential intervention, while other authors suggest admitting patients who present with a TIA and have an ABCD² score of 4 or greater.³

Education regarding early stroke symptoms, risk factors, diagnostic procedures, and treatment options should be offered to every TIA patient and family. This should be documented in the patient's chart.

The following diagnostic evaluations should be performed within 48 hours:

- **Laboratory Tests**
 - ✓ Complete blood count
 - ✓ Glucose
 - ✓ Electrolytes (sodium, potassium, chloride, CO₂)
 - ✓ Sedimentation rate (ESR)

- **Electrocardiogram**
- **Brain and Vascular imaging**
 - ✓ CT/CTA or MRI/MRA
 - ✓ Carotid CTA/ ultrasound
 - ✓ Echocardiogram

In a retrospective study using a Cox regression model with time to recurrent stroke to identify predictors of recurrence in 806 consecutive patients with ischemic stroke who presented to a single center between 2003 and 2006, the rate of recurrent stroke at 90 days was 6.0%. Predictors of a recurrence within 90 days were stroke etiology at admission, history of stroke or transient ischemic attack within the previous month, multiple infarcts, simultaneous infarcts in different circulations, multiple infarcts of different ages, and isolated cortical infarcts. The authors derived a Web-based scoring tool for identifying patients at risk for recurrent stroke. The tool - the Recurrence Risk Estimator at 90 days (RRE-90; available at <http://www.nmr.mgh.harvard.edu/RRE/>) - integrates clinical and imaging information available in the acute care setting.⁴

Sources:

¹ Chandratheva A, Mehta Z, Geraghty OC, et al. Population-based study of risk and predictors of stroke in the first few hours after a TIA. *Neurology*. 2009;72:1941-1947.

² Chandratheva A, Geraghty OC, Luengo-Fernandez R, et al. ABCD² score predicts severity rather than risk of early recurrent events after transient ischemic attack. *Stroke*. 2010;41:851-856.

³ Tsivgoulis G, Stamboulis E, Sharma VK, et al. Multicenter external validation of the ABCD2 score in triaging TIA patients. *Neurology*. 2010 Apr 27;74(17):1351-1357.

⁴ Ay H, Gungor L, Arsava EM, et al. A score to predict early risk of recurrence after ischemic stroke. *Neurology*. 2010;74:128-135.