

Identification and Urgent Management Critical in TIA

Written by Emma Hitt Nichols, PhD

Although the diagnosis of transient ischemic attack (TIA) can be challenging, identifying potential TIAs is imperative for urgent evaluation and treatment for preventing stroke [Castle J et al. *Stroke*. 2010]. Andrew W. Asimos, MD, Carolinas Medical Center, Charlotte, North Carolina, USA, discussed the management of patients with TIA with particular focus on assessment of stroke risk.

According to Dr Asimos, TIA has been defined traditionally as a sudden, focal neurologic deficit that lasts for <24 hours. In 2009, however, the American Heart Association and American Stroke Association's scientific statement defined TIA as a transient event of neurologic dysfunction resulting from focal brain, spinal cord, or retinal ischemia without the presence of acute infarction [Easton JD et al. *Stroke*. 2009]. The duration of TIA symptoms is associated with positive diffusion-weighted imaging (DWI), with DWI positivity in about 30% of patients with symptoms lasting up to 6 hours and DWI positivity in about 50% of patients with symptoms lasting from 6 to 24 hours.

Fifteen years ago, about 10% of patients who experienced a TIA developed a stroke within 90 days, but more recent studies have found 90-day subsequent stroke rates of 2% to 3% [Lavallée PC et al. *Lancet Neurol*. 2007; Rothwell PM et al. *Lancet*. 2007; Perry JJ et al. *CMAJ* 2011]. This decrease in stroke rates is most likely attributable to more immediate investigation and aggressive management during the past 15 years. Nonetheless, the greatest risk period for early recurrent events remains the first few days after the index TIA (Figure 1) [Johnston SC et al. *JAMA*. 2000]. Although risk stratification tools are appealing to help identify patients who are at the greatest risk of early stroke, none of the tools is sufficiently discerning to determine early risk, because high stroke rates have been found in patients predicted to be low risk [Lemmens R et al. *Stroke*. 2013].

For example, 1 study found that a low ABCD² score (≤ 3) has only an 87.3% (95% CI, 83.1% to 90.6%) sensitivity of identifying patients who have a low risk of developing ischemic stroke within 7 days from the TIA [Asimos AW et al. *Ann Emerg Med*. 2010], whereas another study found the ABCD² score to be inaccurate at any cutpoint as a predictor of imminent stroke (Table 1) [Perry JJ et al. *CMAJ*. 2011]. One reason for this may be changes in diagnostic definitions and interventions, which may alter performance of the scores.

A more promising TIA risk score in development is the Canadian TIA Score, which encompasses a range of clinical findings (eg, duration of symptoms, antiplatelet therapy, and triage diastolic blood pressure), as well as investigations in the emergency department (eg, atrial fibrillation on echocardiogram, platelet count, and glucose level) [Perry JJ et al. *Stroke*. 2014].

TIA patients with angiographic evidence of stenosis are at an increased risk of experiencing stroke. Furthermore, the location of disease influences the extent of the risk. In the Oxford Vascular Study [*Neurology*. 2004], the greatest risk of stroke (almost 20%) was associated with large-artery atherosclerosis and the lowest risk of stroke (<5%) was associated with small-vessel disease. In another study, patients with $\geq 70\%$ carotid artery stenosis were significantly more likely to experience stroke at 90 days (Figure 2) [Sheehan OC et al. *Stroke*. 2010]. Dr Asimos pointed out that in patients with $\geq 70\%$ carotid artery stenosis, increased risk of stroke occurred early, beginning within 7 days after TIA.

Recent studies have evaluated the impact of TIA management on subsequent outcomes. The EXPRESS [Rothwell PM et al. *Lancet*. 2007] and SOS-TIA [Lavallée PC et al. *Lancet*. 2007] studies evaluated patients with TIA in a dedicated outpatient unit, which resulted in fewer than expected subsequent strokes. More recently, in the CHANCE trial [Wang Y et al. *N Engl J Med*. 2013], >2500 Chinese patients with nondisabling stroke or TIA and with an ABCD² score of ≥ 4 were treated with clopidogrel (300 mg loading dose, then 75 mg/d for 90 days) plus aspirin

Peer-Reviewed
Highlights From the

**American College of
Emergency Physicians
Scientific Assembly**

October 27–30, 2014
Chicago, Illinois

Figure 1. Risk of Stroke After TIA

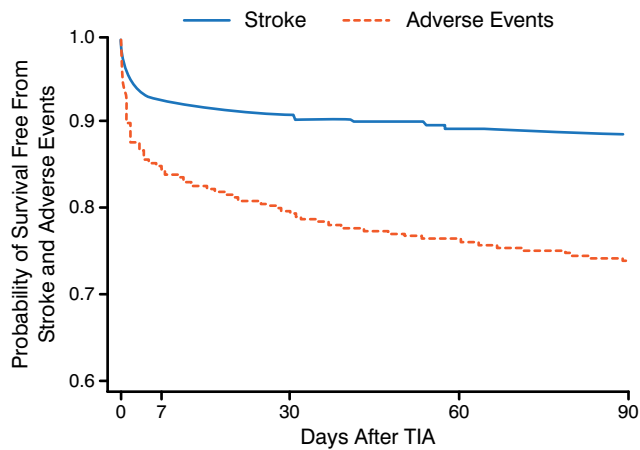
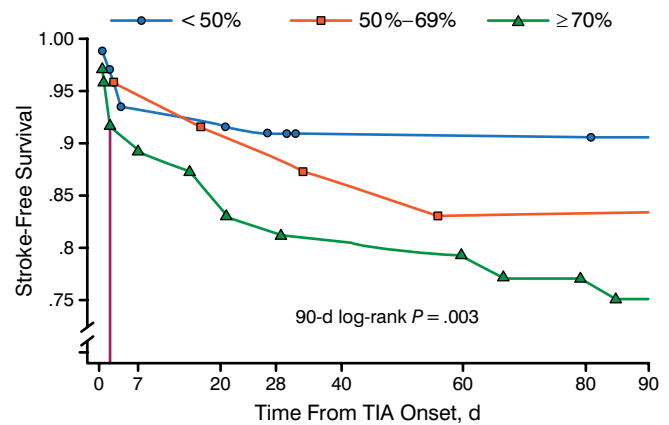


Figure 2. Effect of Carotid Artery Stenosis on Risk of Stroke



TIA, transient ischemic attack.

Adapted from Johnston SC et al. Short-term Prognosis After Emergency Department Diagnosis of TIA. *JAMA*. 2000;284:2901-2906. Copyright © (2000) American Medical Association. All rights reserved

TIA, transient ischemic attack.

Adapted from Sheehan OC et al. Population-Based Study of ABCD² Score, Carotid Stenosis, and Atrial Fibrillation for Early Stroke Prediction After Transient Ischemic Attack. *Stroke*. 2010;41:844-850. With permission from American Heart Association.

Table 1. Sensitivity of ABCD² Risk Score at 7 Days

ABCD ² Threshold for High Risk	Stroke at 7 d (n = 38)	
	Sensitivity, % (95% CI)	Specificity, % (95% CI)
> 0	100.0 (90.8 to 100)	0.7 (0.4 to 1.1)
> 1	100.0 (90.8 to 100)	4.0 (3.2 to 4.9)
> 2	94.7 (82.7 to 98.5)	12.5 (11.2 to 14.1)
> 3	92.1 (79.2 to 97.3)	32.7 (30.6 to 34.7)
> 4	65.8 (49.9 to 78.8)	57.2 (55.0 to 59.3)
> 5	31.6 (19.1 to 47.5)	86.9 (85.3 to 88.3)
> 6	10.5 (4.2 to 24.1)	97.3 (96.5 to 97.9)

Adapted from Perry JJ et al. Prospective validation of the ABCD² score for patients in the emergency department with transient ischemic attack. *CMAJ*. 2011;183:1137-1145. © Canadian Medical Association. This work is protected by copyright and the making of this copy was with the permission of Access Copyright. Any alteration of its content or further copying in any form whatsoever is strictly prohibited unless otherwise permitted by law.

(75 mg/d for 21 days). When compared with treatment with aspirin alone, dual antiplatelet therapy reduced the risk of stroke at 90 days by 32% without significantly increasing the rate of bleeding.

In the United States, the ongoing phase 3 POINT trial [NCT00991029] will randomly assign patients within 12 hours of TIA to receive clopidogrel (600 mg loading dose) plus aspirin (50 to 325 mg) followed by maintenance clopidogrel (75 mg/d) or placebo for 90 days. Dr Asimos recommended not changing clinical practice in the United States regarding early antiplatelet therapy until the results of the POINT trial are available late in 2016.

In 2013, the American College of Emergency Physicians (ACEP) published a clinical policy recommending that tissue plasminogen activator (tPA) be offered or considered in patients with acute ischemic stroke in those who meet the National Institute of Neurological Disorders and Stroke inclusion criteria [Edlow JA et al. *Ann Emerg Med*. 2013]. Widespread controversy prompted the formation of a Clinical Policies tPA subcommittee [Cantrill S. *ACEP Now*. 2014]. The subcommittee conducted an updated literature search and reviewed open comments received from ACEP members. The subcommittee's recommendation was to update the tPA policy. This recommendation was approved in June 2014 by the ACEP board.