

## Transient Ischemic Attack: The Rules Have Changed

ROBERT DACHS, MD, FAAFP, *Ellis Hospital Family Medicine Residency Program, Schenectady, New York*

ANDREA DARBY-STEWART, MD, *St. Joseph's Family Medicine Residency Program, Phoenix, Arizona*

MARK A. GRABER, MD, FACEP, *University of Iowa Carver College of Medicine, Iowa City, Iowa*

### Purpose

In *AFP Journal Club*, three presenters review an interesting journal article in a conversational manner. These articles involve “hot topics” that affect family physicians or “bust” commonly held medical myths. The presenters give their opinions about the clinical value of the individual study discussed. The opinions reflect the views of the presenters, not those of *AFP* or the AAFP.

### Article

Easton JD, Saver JL, Albers GW, et al. Definition and evaluation of transient ischemic attack: a scientific statement for healthcare professionals from the American Heart Association/American Stroke Association Stroke Council; Council on Cardiovascular Surgery and Anesthesia; Council on Cardiovascular Radiology and Intervention; Council on Cardiovascular Nursing; and the Interdisciplinary Council on Peripheral Vascular Disease. The American Academy of Neurology affirms the value of this statement as an educational tool for neurologists. *Stroke*. 2009;40(6):2276-2293.

For more information on evidence-based medicine (EBM) terms, see the EBM Toolkit at <http://www.aafp.org/afp/ebmtoolkit>.

A collection of *AFP Journal Club* published in *AFP* is available at <http://www.aafp.org/afp/jc>.

### What does this guideline say?

*Bob:* If you thought you knew what a transient ischemic attack (TIA) is, and how to evaluate for it, think again. This scientific statement snuck past a lot of us and its implications are far-reaching.

The guideline includes three game changers for all physicians:

- It revises the definition of TIA
- It recommends that magnetic resonance imaging (MRI) be performed within 24 hours in patients presenting with TIA
- It recommends that the ABCD<sup>2</sup> (age, blood pressure, clinical features, duration, diabetes mellitus) score be used in the evaluation of TIA

Let's start with the change in definition. Many of us learned the classic 24-hour definition: if neurologic symptoms resolve within 24 hours of onset, it is considered a TIA. In 2002, the TIA Working Group recognized that an ischemic episode that improves at 23 hours is not biologically different from one that improves at 25 hours.

Simply put, there was nothing magical about the 24-hour cutoff. The TIA Working Group recommended changing the definition to the following: a brief episode of neurologic dysfunction caused by focal brain or retinal ischemia, with clinical symptoms typically lasting less than one hour and without evidence of acute infarction.<sup>1</sup>

The big change in the current guideline is the elimination of reference to duration of symptoms. In other words, the “less than one hour” is gone. This is because one-third of patients whose symptoms abate within one hour have evidence of acute stroke on diffusion-weighted MRI.

The new definition of TIA also states that there must be no evidence of acute infarction. This leads into the second recommendation, that patients with suspected TIA should preferably undergo diffusion-weighted MRI as a means of ruling out infarction within 24 hours of symptom onset.

Lastly, the guideline recommends that the ABCD<sup>2</sup> score (*Table 1*<sup>2</sup>) be used to determine which patients should be hospitalized: patients with a score of 3 or greater and patients with lower scores who may not follow up within two days.

### What should we make of this guideline?

*Bob:* I don't have a major problem with the change in definition. I understand that the authors of the guideline want to focus more on the pathophysiology of the disease than on the temporal course of symptoms. This is analogous to a patient who presents with chest pain—a biomarker (typically, troponin) is used to distinguish angina from myocardial infarction. In this guideline, the authors want to use MRI to distinguish

**Table 1. ABCD<sup>2</sup> Scoring System for the Evaluation of Transient Ischemic Attack**

Clinical characteristics	Points
Age ≥ 60 years	1
Blood pressure: systolic ≥ 140 mm Hg or diastolic ≥ 90 mm Hg	1
Clinical features	
Unilateral weakness	2
Speech impairment without weakness	1
Duration of transient ischemic attack	
≥ 60 minutes	2
10 to 59 minutes	1
Diabetes mellitus	1

NOTE: According to the guideline, it is reasonable to hospitalize patients with transient ischemic attack if they present within 72 hours and have an ABCD<sup>2</sup> score of ≥ 3, indicating high risk of early recurrence, or if the evaluation cannot be rapidly completed on an outpatient basis.

Information from reference 2.

between a TIA and a cerebrovascular accident. This sounds good in theory, but MRI is different than a blood test. And there is a timing issue—how many institutions can get immediate MRI, or even MRI within 24 hours of symptom onset? How many insurance companies allow this? Even if you can get an MRI within the timeframe recommended, does it make any difference in the long-term outcome of the patient who has returned to baseline?

**Mark:** The authors like MRI because it detects more lesions (i.e., infarcts) than computed tomography. But just because a small cerebrovascular accident was uncovered, will it lead to a change in care (better or worse)? The authors of this guideline note that patients with a stroke diagnosed with MRI have a greater risk of having a more disabling subsequent stroke than those with a normal MRI result. Again, although this may be interesting prognostic information, there is no evidence that an infarct identified on MRI will lead to more aggressive medical/surgical treatment or to better outcomes. This is another recommendation based on disease-oriented evidence, and not on patient-oriented evidence that matters.

**Andrea:** Expanding the use of MRI also will invariably lead to the documentation of more strokes, thereby accelerating cerebrovascular accident rates to much higher levels than previously reported. This is the dilemma of having sensitive radiologic studies—they

identify more lesions, but does this lead to improved outcomes? Case in point: from 1993 to 1998, the rate of pulmonary embolism diagnosis remained stable, but this rate nearly doubled in the eight years following the introduction of computed tomography diagnosis for pulmonary embolism. However, mortality rates did not improve with computed tomography diagnosis, and the rates of anticoagulation-related complications increased by 71 percent.<sup>3</sup>

I believe we are going to have to face up to this coming challenge: when increasingly sophisticated imaging technology enables us to see inside vessels millimeters in diameter and detect a clot or a few ischemic cells, what are we going to do? Will this actually represent disease, or will it represent incidentalomas or normal aging? Will treatment provide any benefit or just potential harm?

**Bob:** That brings us to the second recommendation in the guideline: using the ABCD<sup>2</sup> score to decide on hospitalization. The ABCD<sup>2</sup> scoring system was developed to assess the short-term risk of TIA progressing to a complete cerebrovascular accident. It is a combination of two earlier scoring systems: the California score, created by the Kaiser Group in 2000, and the ABCD score developed in Great Britain in 2005. The composite ABCD<sup>2</sup> score was derived and validated in 2007 (Table 1).<sup>2</sup>

**Mark:** Be careful here. The authors of the ABCD<sup>2</sup> study say they “validated” their scoring system. How did they do that? They retrospectively applied this new score to a previous population of patients they themselves studied. In a previous *AFP* Journal Club on the San Francisco Syncope Rule, we made the point that before a clinical decision rule can be used, it needs to be externally validated.<sup>4</sup> In other words, it needs to be “road tested” by other investigators in a completely new population before widespread use.

**Bob:** Interestingly, many other researchers have subsequently tried to assess the prognostic accuracy of the ABCD<sup>2</sup> score. Some find it accurate, whereas others don't.<sup>5</sup> The problem with all of these follow-up studies is their heterogeneity—some include emergency department patients only, some include outpatients, some are retrospective, and some are prospective. I don't think there is a definitive answer as to the prognostic accuracy of the score.

**Andrea:** I am even more troubled by the recommendation that the ABCD<sup>2</sup> score be used to decide whether a patient should be hospitalized. This recommendation has far-reaching consequences. If you were to hospitalize

patients with a score of at least 3 points in the original Kaiser study, 92 percent of all patients with TIA would be hospitalized.<sup>6</sup> This recommendation is frustrating because there has never been a study showing that admission decisions based on ABCD<sup>2</sup> scores result in better outcomes. The recommendation is based entirely on hypothesis and no evidence.

**Bob:** That is the problem you have every time level C evidence is reported. There is no evidence—it is just the opinion of the authors of the guideline.

Unfortunately, level C evidence recommendations are commonplace. A review of 16 current American Heart Association/American College of Cardiology guidelines produced from 1984 to 2008 revealed that only 11 percent of recommendations were based on level A evidence (i.e., derived from multiple randomized trials or meta-analyses), whereas 48 percent were level C (expert opinion).<sup>7</sup>

### What should the family physician do?

**Mark:** Like Bob, I don't have a major problem with the change in the definition of TIA. It is just unfortunate that we are being held to recommendations to obtain studies (in this case, MRI) and use scoring systems (ABCD<sup>2</sup>) without any evidence that their use improves patient outcomes.

**Andrea:** Although the promise of guidelines is to deliver well-proven strategies of medical care, we have all too often seen these well-intentioned documents run amok. Here's an example: give antibiotics within four hours of arrival for patients with pneumonia. Any evidence? No. Subsequently this recommendation was withdrawn after years of driving ourselves crazy to meet this standard.

**Bob:** How organizations develop clinical guidelines has come under recent scrutiny. In an upcoming *AFP* Journal Club, we will take a look at how two organizations looking at the same question can publish guidelines with differing answers.

### Main Points

- The new definition of TIA no longer includes reference to duration of symptoms and is now a "tissue-based" definition.
- The American Heart Association recommends using the ABCD<sup>2</sup> score to determine the need for hospitalization in patients with TIA.
- Be wary of clinical guidelines that are based on expert opinion.

### EBM Points

- Remember the difference between disease-oriented evidence and patient-oriented evidence that matters.
- Clinical scoring systems should be externally validated ("road tested") before widespread implementation.
- The level of evidence of clinical guidelines should be reviewed before widespread implementation.

If you conduct a journal club and would like to know the next article that will be discussed, please e-mail [afpjournal@aafp.org](mailto:afpjournal@aafp.org) with "AFP Journal Club notification" in the subject line.

Address correspondence to Robert Dachs, MD, FAAFP, at [dachsm@aol.com](mailto:dachsm@aol.com). Reprints are not available from the authors.

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