See related article, pages 2864–2868.

In this issue of Stroke, Kleindorfer and colleagues report on a chart review comparing the traditional 5 “sudden” warning signs of stroke and the FAST system. FAST is based on the Cincinnati Prehospital Stroke Scale (CPSS) and focuses on 3 symptoms: facial droop (F), arm drift (A) and speech problems (S), with “T” for “time” rounding out the acronym. As Kleindorfer and colleagues point out, the standard list of 5 warning signs was created by a committee (the Brain Attack Coalition). Although it may be neurologically sound, Kleindorfer et al suspect it does not represent best practices when talking to the general public.

But what does make for effective public education messaging? If we look at the world of advertising, there appears to be 3 underlying principles for getting messages out to people—and ensuring they are remembered. They are: (1) consistency, (2) simplicity, and (3) repetition.

Consistency
Looking at public-oriented websites of some of the major English-language stroke organizations suggests that common messaging on the warning signs of stroke follows national boundaries. The American Stroke Association (ASA), National Stroke Association (NSA) and National Institute of Neurological Disorders and Stroke (NINDS) all list the same 5 warning signs. The Heart and Stroke Foundation of Canada lists five, as does the Stroke Association of the UK (SA UK) but the wording differs not only from one another but from that used by the ASA, NSA and NINDS. The National Stroke Foundation (NSF) of Australia lists 6 symptoms and the Stroke Foundation of New Zealand (SFNZ) 3.

Simplicity
Kleindorfer et al suggest that one of the major advantages of the FAST system is that is simpler and therefore easier for the general public to remember. It would appear as though many organizations agree with her: the NSA, NSF, SFNZ and the SA (UK) feature FAST on their websites. So FAST is gaining ground quickly, which makes research such as by Kleindorfer et al’s so important. If public education is going to promote the use of FAST, it is critical to know both its strength and its weaknesses.

The primary advantage of FAST, Kleindorfer et al argue, is that 3 signs may be easier for the public to remember than 5.

Although this sounds logical, whether it is true is unknown. Most research to date on FAST has focused on its use by healthcare professionals, such as physicians or emergency medical services. Kleindorfer et al’s article was conducted by having study nurses review hospital charts. So the ability of the public to remember—and more importantly, to react appropriately—to the 3 FAST warning signs remains unknown. This is a critical research gap that needs to be filled.

The primary drawback of FAST is that it does not identify as many strokes as the traditional 5 symptoms, which Kleindorfer et al found captures 99.9% of actual hospitalized stroke cases. In this study, FAST performed better for ischemic stroke and transient ischemic attacks (TIAs), where it missed only about 8% to 9% of actual cases, than for hemorrhagic stroke, where 30.6% of cases were missed. Balancing this shortcoming is the fact that hemorrhagic strokes accounted for only 11.1% of the total volume of strokes in the study.

The performance of FAST fell when the “abbreviated” version was used that does not include the concept of numbness. As the authors describe, when numbness was not included, the percent of all strokes missed rose from 11.1% to 16.8%, with the effect being minimal for hemorrhagic stroke (rising from 30.6% to 32.6%), moderate for ischemic stroke (rising from 8.9% to 12.3%) and greatest for TIAs (jumping from 8.2% to 20.6%). TIAs accounted for 27.6% of the study events. However, sheer numbers is not the only thing of importance. TIAs are critical opportunities for secondary prevention and the more we can get to medical attention, the better the chances of intervention.

Because Kleindorfer et al only had data on confirmed strokes, they could not calculate the sensitivity (proportion of people with stroke who had a positive test), specificity (proportion of people free of stroke who had a negative test) or positive predictive value (proportion of cases with positive test results who had the target disorder). A presentation at the 28th International Stroke Conference reported that among 843 patients with a prehospital diagnosis suggestive of stroke the CPSS had an overall sensitivity of 90%, specificity of 66% and positive predictive value of 59%. For strokes potentially eligible for thrombolytic therapy, the values were calculated to be: sensitivity of 98%, specificity of 92% and positive predictive value of 45%.

If implemented, would FAST increase the number of hospital presentations? Would the proportion of missed cases remain similar to those observed in Kleindorfer et al’s chart review? We simply don’t know. To address these questions, we need a direct comparison of not only the public’s ability to remember FAST versus the traditional 5 but to react appropriately (ie, to call 9-1-1).

Repetition
No matter which system is chosen for public health communication (FAST or the traditional 5), effectiveness will
depend largely on how strongly and widely it is promoted. Rote learning may be out of fashion these days, but advertising shows us that the trick to getting people to remember is repetition. Data from one Canadian province recently published in Stroke suggests that public knowledge of the warning signs of stroke can be increased by well-planned mass media campaigns—but can also fall when you cease promotion. To summarize, if we are to educate people about the warning signs of stroke, it appears that we need to keep it consistent, keep it simple and keep it up.

In a direct test of print versus paid television advertising, the Heart and Stroke Foundation of Ontario found television was clearly more effective—even when communicating that “complex” list of 5 warning signs. Note, however, that the winner was paid advertising; public service announcements simply lack the media reach and frequency to be effective. This does not come cheaply. We need governments to see the number of people who present with stroke in a timely fashion could be money well spent.

Disclosures
None.

References

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To FAST or Not to FAST?
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