

ing our own families. We can only provide palliative therapy for many diseases and not cures.

An evaluation of hemiplegic patients found that greater than 50% were self-sufficient.⁴ There is also a close correlation after stroke of social stress with the inability to understand language, not the ability to ambulate.⁵ Therefore, a better argument may be “cognate or die,” assuming that social stress and disability are worse than life itself.

Walter L. Green, MD

1. Wyer PC. Feedback: walk or die! (in response). *Ann Emerg Med.* 1999;34:661-662.
2. Cordell WH. Feedback: walk or die! *Ann Emerg Med.* 1999;34:661.
3. Ganzini L, Johnston WS, McFarland BH, et al. Attitudes of patients with amyotrophic lateral sclerosis and their care givers toward assisted suicide. *N Engl J Med.* 1998;339:967-973.
4. Santus G, Ranzenigo A, Caregnato R, et al. Social and family integration of hemiplegic elderly patients 1 year after stroke. *Stroke.* 1990;21:1019-1022.
5. Angeleri F, Angeleri VA, Foschi N, et al. The influence of depression, social activity, and family stress on functional outcome after stroke. *Stroke.* 1993;24:1778-1783.

In response:

[Wyer PC. Feedback: “think or die” [response]. *Ann Emerg Med.* September 2000;36:254.]

Dr. Green’s comments highlight important limitations of the outcome measurements used in the published randomized controlled trials of thrombolysis in stroke. He points out that the choice between “walk or die” as an outcome of ischemic stroke may overlook the very thing that many patients would consider to be the principal measure of recovery: the level of cognitive function and mental life in the stroke survivor. Another potential outcome measure not addressed by the “walk or die” formula—quality of life assessment—may, in some cases, be more related to cognitive function than to the ability to conduct activities of daily living without assistance.

The trials of rt-PA for patients with acute ischemic stroke that were considered in the discussion at issue in Dr. Green’s letter used neurologic deficit scores, including the National Institutes of Health Stroke Scale (NIHSS) and the Scandinavian Stroke Scale, as well as functional outcome scores including the Barthel Index, the modified Rankin Score, and the Glasgow Outcome Score.¹⁻³ Although the NIHSS includes measures of aphasia and dysarthria, none of these scales directly measures cognitive function and none attempts to assess quality of life after the stroke.

Why have these been the preferred instruments for measurement of outcome in the thrombolytic stroke trials to date? One reason is that functional outcome and neuro-

logic deficit scores are easy to teach and are objectively reproducible.⁴⁻⁶ Another is that disease-specific quality-of-life instruments have only recently begun to be developed for stroke.

Current research in the field of stroke trial methodology reflects these concerns.⁷⁻¹⁰ One recent study reported that a stroke-specific quality-of-life measure, but not a generic quality-of-life measure correlated with patient-reported quality-of-life assessment.⁷ The same study also reported a strong correlation between the quality-of-life ratings and standard stroke outcome measures including the Barthel Index and the NIHSS. On the other hand, another recent study found wide variability in how patients valued outcomes of stroke and concluded that, within their study population, people were not inclined to accept stroke treatment options involving very high risks.¹⁰

Neurologic and functional outcome measures might correlate significantly more with cognitive and quality-of-life outcome measures in the case of stroke than in the case of disorders that spare cognitive function such as spinal cord injury and amyotrophic lateral sclerosis. Nonetheless, Dr. Green’s comments underline the fact that more research is needed in the area of thrombolytic therapy in stroke, not only for the purpose of determining who benefits and by how much, but also to determine how we should measure that benefit.

Peter C. Wyer, MD

1. Hacke W, Kaste M, Fieschi C, et al. Randomised double-blind placebo-controlled trial of thrombolytic therapy with intravenous alteplase in acute ischaemic stroke (ECASSII). *Lancet.* 1998;352:1245-1251.
2. Hacke W, Kaste M, Fieschi C, et al. Intravenous thrombolysis with recombinant tissue plasminogen activator for acute hemispheric stroke—The European Cooperative Acute Stroke Study (ECASS). *JAMA.* 1995;274:1017-1025.
3. Tissue plasminogen activator for acute ischemic stroke. The National Institute of Neurological Disorders and Stroke rt-PA Study Group. *N Engl J Med.* 1995;333:1581-1587.
4. Lyden PD, Lau GT. A critical appraisal of stroke evaluation and rating scales. *Stroke.* 1991;22:1345-1352.
5. Lyden P, Brott T, Tilley B, et al. Improved reliability of the NIH Stroke Scale using video training. *Stroke.* 1994;25:2220-2226.
6. Goldstein LB, Bertels C, Davis JN. Interrater reliability of the NIH Stroke Scale. *Arch Neurol.* 1990;46:660-662.
7. Williams LS, Weinberger M, Harris LE, et al. Measuring quality of life in a way that is meaningful to stroke patients. *Neurology.* 1999;53:1839-1843.
8. Broe GA, Jorm AF, Creasey H, et al. Impact of chronic systemic and neurological disorders on disability, depression and life satisfaction. *Int J Geriatr Psychiatry.* 1998;13:667-673.
9. Carod-Artal FJ. Measurement of the quality of life in stroke survivors. *Rev Neurol.* 1999;29:447-456.
10. Hallan S, Asberg A, Indredavik B, et al. Quality of life after cerebrovascular stroke: a systematic study of patients’ preferences for different functional outcomes. *J Intern Med.* 1999;246:309-316.