

Review: Stroke centers need administrative support, protocols, multidisciplinary staff, and access to hospital services

Alberts MJ, Hademenos G, Latchaw RE, et al., for the Brain Attack Coalition. **Recommendations for the establishment of primary stroke centers.** JAMA. 2000 Jun 21;283:3102-9.

QUESTION

What recommendations can be made using evidence in the published literature for the establishment and operation of primary stroke centers to improve medical care and outcomes?

DATA SOURCES

English-language randomized controlled trials, practice guidelines, and observational studies were identified by searching MEDLINE (1966 to March 2000).

STUDY SELECTION

Studies and guidelines were selected if they addressed the formation; function; outcomes, including patient comfort; and economics of stroke centers, which were defined as specialized infrastructures necessary to provide the best possible care for patients with acute stroke.

DATA EXTRACTION

Data were extracted and recommendations were made for patient care (acute stroke teams, written care protocols, emergency medical services, emergency department [ED], stroke unit, and neurosurgical services) and support services (commitment and support of organization, neuroimaging and laboratory services, outcomes, quality improvement [QI] activities, and continu-

ing medical education [CME]). Recommendations were made, reviewed, and modified by members of the multidisciplinary team responsible for the project (Brain Attack Coalition [BAC]).

MAIN RESULTS

A multidisciplinary team that can respond quickly when stroke is suspected should be available 24 h/d. The stroke team must be experienced and trained to care for patients with cerebrovascular disease and must have the support of the institution. Comprehensive, multidisciplinary written care protocols for emergency care of patients with ischemic and hemorrhagic stroke must be developed, implemented, and kept up-to-date. Emergency medical services staff need training in transport and triage of patients with stroke and coordination with the stroke team. ED staff needs training, protocols that include treatment direction, and coordination with the stroke team. Stroke units need trained and experienced staff (physicians, nurses, and therapists) and should include monitoring and specialized multidisciplinary care and procedures. Laboratory services and neuroimaging facilities (computed tomography or magnetic resonance imaging) must be available 24 h/d and must provide rapid reports. Neurosurgical care must be available within

2 hours. The administration should provide support, staff, and resources for the delivery of high-quality and efficient care. A designated medical director should provide strong leadership and guidance. Outcomes need to be evaluated and recorded for use in administrative decision making, QI, and CME programs. QI should involve ≥ 2 patient-care issues/y. Each staff person should accumulate 8 CME credit-h/y. If these recommendations are implemented, patient care will improve, short- and long-term mortality and morbidity will decrease, resources will be used more appropriately, costs will decrease, and patient satisfaction will improve.

CONCLUSION

Primary stroke centers should have administrative support; written, updated protocols; trained and experienced multidisciplinary staff; coordination with other hospital services; and fast access to laboratory, diagnostic, therapeutic, and rehabilitative services.

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For correspondence: Dr. M.J. Alberts, P.O. Box 3392, Bryan Research Building, Room 227E, Duke University Medical Center, Durham, NC 27710, USA. FAX 919-684-6514. ■

COMMENTARY

The starting point for developing the BAC recommendations was a review of the scientific evidence. However, BAC members have not been consistent in reviewing only scientific evidence. Often they refer to other guidelines and reviews that are at least partly opinion based. A distinction between evidence- and opinion-based recommendations, including systematic grading of the scientific evidence that supports the recommendations, would have strengthened the document.

The main emphasis of the BAC is to improve the infrastructure for care of patients with acute stroke, including, among other possibilities, very early treatment with tissue plasminogen activator (t-PA). Although t-PA is an effective treatment, it is still suitable for only a few patients (1). If a 5-fold increase in the proportion of U.S. patients who receive t-PA from the baseline level of 2% to 3% occurred and results from randomized controlled trials could be reproduced in routine settings, only 1% or 2% of patients would have better function.

These benefits should be compared with what is accomplished in "nonintensive" stroke units that admit *all* patients with acute stroke. The emphasis in these units is on interdisciplinary team work, prevention and treatment of secondary complications, and early reactivation

or rehabilitation. A systematic review has shown that 5 to 6 out of 100 patients have decreased mortality and improved function after stroke unit care (2, 3).

The benefits of *intensive-care* stroke units have yet to be proved. Establishing an infrastructure for superacute interventions, including t-PA, as in the new U.S. recommendations, could perhaps be an important addition to nonintensive stroke-unit care.

*Kjell Asplund, MD
University Hospital
Umea, Sweden*

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