

MILLENNIUM GROWTH STRATEGIES

for Health Care

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New Treatments Available to Manage a Leading Cause of Death

At least 600,000 people experience strokes each year with some studies estimating that as many as three quarters of a million people have first time or recurrent strokes each year. Stroke is the third leading cause of death in the United States and the sixth most common non-newborn diagnosis leading to admission into the hospital.

Significant improvements in stroke treatment protocols, including the use of tissue plasminogen activator (tPA) and other anticoagulant therapies administered within three hours of stroke onset, have emerged in the last few years. These improvements have led to interest in developing stroke centers as a means to reduce long-term morbidity and mortality, improve clinical outcomes, and concentrate market share in leading centers.

Growth and Revenue Opportunities: Stroke Centers

Stroke programs can generate additional patient volumes and revenues in the following ways:

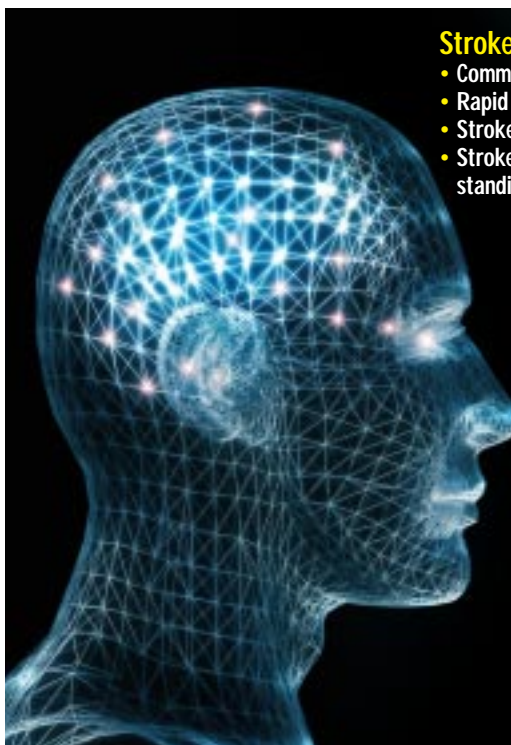
- A well-organized multidisciplinary stroke center will generate more referrals from EMT personnel and primary care physicians who have been educated to recognize stroke symptoms, understand the importance of early intervention treatment, and recognize the superior ability of stroke centers to effectively treat these patients.
- Community outreach and education increases the visibility of effective treatment and results in more self-referrals by patients who might otherwise not seek timely treatment.
- Increases in stroke volume will generate additional demand for surgery and other follow-up services such as imaging, interventional vascular procedures, and physical, occupational, and speech therapy.
- Many stroke centers receive grant income by participating in clinical trials.

Stroke centers have historically developed in academic medical centers because of the multidisciplinary approach to stroke treatment and the advanced technology needed to diagnose and treat more complex conditions. However, studies have shown that many strokes can be effectively treated in

community hospitals because of significant improvement in stroke protocols and the administration of tPA. Also, the basic technology to diagnose and treat strokes is already available in many hospitals, which keeps the investment required to develop a stroke center relatively low.

Key features of a stroke program include the development of a stroke team

and stroke protocols to reduce the elapsed time between stroke onset and treatment. These protocols begin with prehospital care and coordinate diagnostic testing and treatment once the patient arrives in the ED. Improved diagnosis and treatment will reduce the costs of a stroke admission by reducing length of stay and improving the functional status of patients at discharge.



Stroke Center Features

- Community awareness programs
- Rapid stroke identification programs
- Stroke teams (24/7 coverage)
- Stroke-care protocol with standing orders
- Neurologist oversight
- Anticoagulation clinics
- Stroke units
- Rehabilitation units

Basic Technology

- Emergency department
- Brain CT
- Pharmacy protocol including tPA treatment
- Transthoracic echocardiography
- Carotid ultrasonography
- Cerebral angiography
- Carotid endarterectomy
- Neurosurgery

Advanced Technology

- MRI (angiography, diffusion-weighted, spectroscopy)
- Transesophageal echocardiography
- Transcranial Doppler ultrasonography
- Interventional radiology (intra-arterial thrombolysis, angioplasty, stenting, coils, and embolization)
- Advanced neurosurgery procedures

Adapted from Goldstein, L.B., L.A. Hey, R. Laney. January 2000. "North Carolina Stroke Prevention and Treatment Facilities Survey." *Stroke* 31: 66-70.

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The Stanford Stroke Center in Palo Alto, California, established in 1992, has experienced significant increases in hospital and physician billings, resulting in a profitable service that contributes to the hospital's bottom line. Patient volume through the Stanford Stroke Center increased 63% overall during a recent three-year period and its stroke market share more than doubled. At several community hospitals with stroke programs, not only have clinical outcomes improved and costs of patient care reduced, participation in clinical trials has generated additional funding for research.

The guidelines on stroke centers, published in the June 21, 2000 issue of the *Journal of the American Medical Association*, recommend developing primary and comprehensive stroke centers. This recommendation, along with other compelling evidence of opportunities to improve patient care and generate revenue, should spur providers to assess their stroke capabilities and consider developing a stroke center.



For more information on stroke centers and other growth and revenue enhancement opportunities, please contact one of our directors:

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