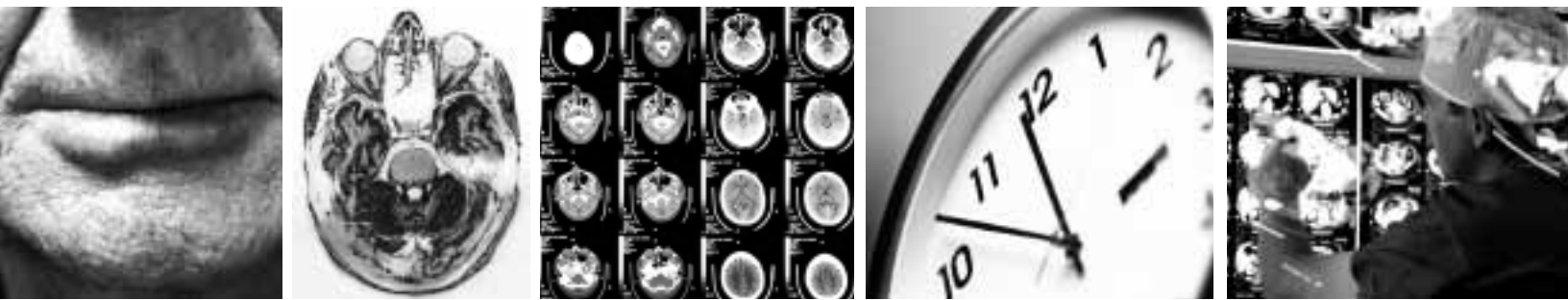


# Building the Case for a Primary Stroke Center

## A Resource Guide



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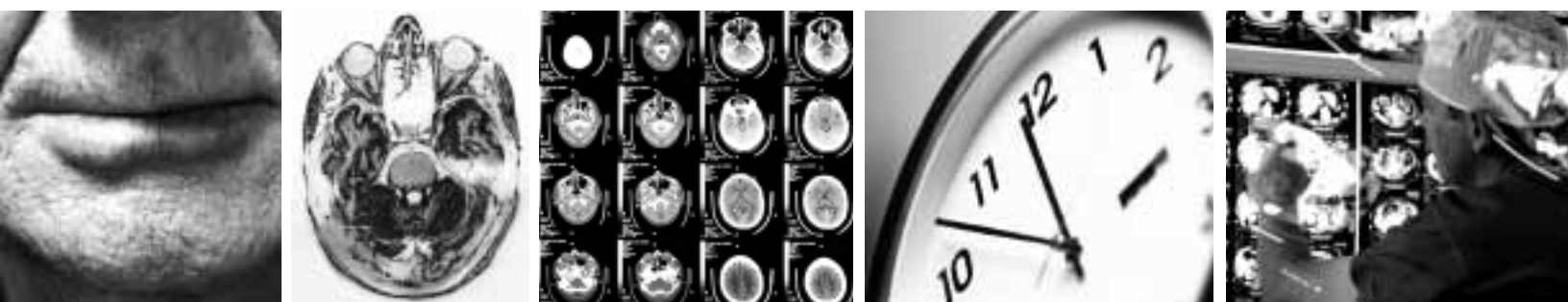
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# Building the Case for a Primary Stroke Center

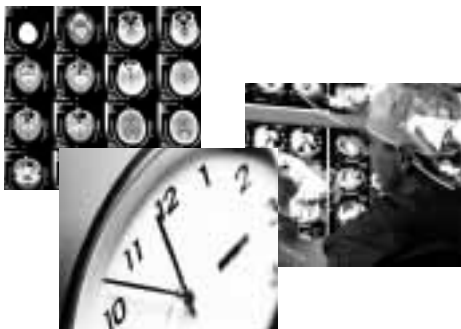
## A Resource Guide



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# Building the Case for a Primary Stroke Center

## A Resource Guide

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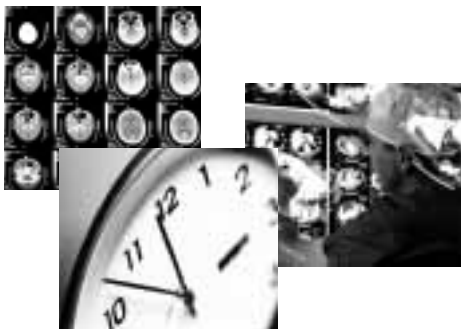
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## OVERVIEW

This is an exciting time in the treatment of stroke. The stage has been set to see considerable improvements in patient outcomes. In the past decade, the FDA has approved a drug therapy and a device for the treatment of ischemic stroke. In addition, the certification of stroke centers and the establishment of a new stroke reimbursement code is allowing more hospitals to access and provide treatments to stroke patients. Now, with the “baby boomer” generation coming around the corner, the need for these treatments will be at its greatest. It is up to all of us to recognize the opportunities before us and meet the third leading cause of death in the United States<sup>1</sup> head on.

## How to Use This Guide

This Resource Guide is intended to help healthcare professionals and hospital administrators improve their hospital’s acute stroke care by developing an efficient, financially viable primary stroke center (PSC). It guides the “stroke champion,” the leader of this initiative, and other key stroke care providers through the presentation of a case for a PSC to the hospital administrators and board members. Recognizing that no two facilities are alike — inpatient population, payor mix (managed care, Medicaid, Medicare, etc.), fiscal structure, and breadth of services — this guide provides broadly applicable fundamentals for establishing and operating a PSC.

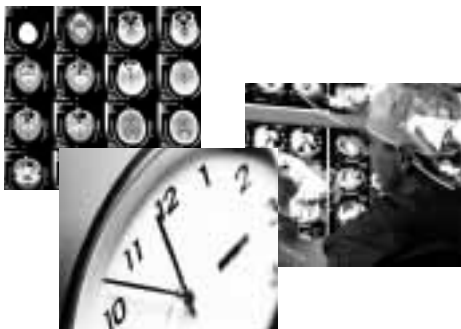
Although the guide may be useful for institutions pursuing Joint Commission on Accreditation of Healthcare Organizations (JCAHO) or individual state PSC certification, it does not offer all the answers to fit every situation. Choose the information that applies to your institution to build your case for a PSC, and plan its development and implementation.

This guide contains 4 parts, culminating with how to write a business plan. It is essential to have a thorough understanding of each part before proceeding to the next.

### WHAT THIS GUIDE CONTAINS

Section	Topic	Content
Part 1	<i>Get Ready</i> What Are the Clinical Components of a PSC?	Brain Attack Coalition recommendations for PSC components: patient care and support services; quality improvement.
Part 2	<i>On Your Mark</i> Justifying a PSC to Hospital Administration	The benefits of a PSC that will drive the interest and commitment of administrators. Essential compelling points for the business plan.
Part 3	<i>Get Set</i> Important Considerations	Introduction to creating a business plan and building a case for a PSC. Explains the influence of your hospital setting, stroke center certification, the impact of a PSC on hospital services, and how to overcome barriers.
Part 4	<i>Go!</i> Pulling it all Together: Writing the Business Plan	How to prepare a business plan, the backbone for gaining broad internal support for a PSC, and the essential road map for demonstrating how the PSC will operate to benefit the hospital and the community.

\*Please note, since printing, JCAHO is now known as The Joint Commission.



## The Need for Improved Stroke Care – Why Become a PSC?

Stroke is the third leading cause of death in the United States after heart disease and cancer.<sup>1</sup> According to the 2006 update of the American Heart Association's *Heart Disease and Stroke Statistics*, nearly 1 in 15 deaths in 2003 were the result of stroke.<sup>2</sup> Among the estimated 5.1 million stroke survivors, many are afflicted with serious, long-term disability.<sup>1,2</sup> The 2006 annual economic costs of stroke (all types) in the United States were estimated at \$57.9 billion. More than 64% of this sum consisted of direct healthcare expenses; the remaining \$20.6 billion represented indirect costs, including lost productivity due to morbidity and mortality.<sup>2</sup>

Many US hospitals lack the necessary infrastructure and organization required to triage and treat patients with stroke quickly and efficiently, and do not deliver adequate stroke care.<sup>3,4</sup> Even though a 2003 statewide assessment of hospital-based stroke care and prevention in North Carolina demonstrated that many hospitals had improved in key elements necessary to provide care over the 5-year study, the data indicate that they were still lacking in a number of areas, including the use of a t-PA protocol (54%), the 24/7 availability of a neurologist (30%) or interventional radiologist (9%), use of stroke care maps (30%), presence of a stroke unit (19%) and a stroke team (16%), and a sufficient community awareness program (27%).<sup>5</sup> While this evidence supports a growth in infrastructure, there is room for improvement. Strides are being made and the number of stroke centers has been continually rising, but a lot more can be done.

## Trauma Centers: A Successful Model

One model for rapid response for stroke care integrates the protocols established by the emergency department (ED) response to trauma. Trauma centers provide an example of how development of specialized centers in response to a specific need has improved emergency care. The trauma center concept has been extremely successful in organizing effective acute trauma care as reflected in improved survival rates after major trauma.<sup>6-8</sup> Effective trauma treatment includes elements that can be incorporated into the treatment of stroke.

### Components of an Effective Trauma Center<sup>9-11</sup>

- Protocol development
- Centers of excellence
- High public awareness
- Rapid access to emergency medical services (EMS)
- Pre-hospital electrocardiogram (ECG) and other interventions
- Confirmatory tests
- Strong collaboration with specialists
- ED team and protocols in place
- "Golden hour" of trauma



## The Brain Attack Coalition and PSCs

Part 1 of this Guide presents the recommendations of the Brain Attack Coalition (BAC) for establishing a PSC. The BAC is a multidisciplinary “group of professional, voluntary, and governmental entities dedicated to reducing the occurrence, disabilities and death associated with stroke. The goal of the Coalition is to strengthen and promote the relationships among its member organizations in order to help stroke patients or those who are at risk for a stroke.”<sup>12</sup>

Hospitals that have established stroke centers have demonstrated improved treatment, better patient outcomes, and reduced care costs.<sup>13-15</sup> They have the required infrastructure and written protocols in place to stabilize and provide rapid, optimal, and efficient care to acute stroke patients.

### Brain Attack Coalition<sup>15</sup>

[www.brainattackcoalition.org](http://www.brainattackcoalition.org)

**Mission:** Reducing the occurrence, disabilities, and death associated with stroke.

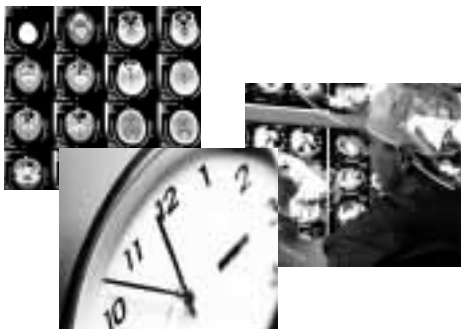
#### Coalition Members

- |   |   |
|---|---|
| ■ American Academy of Neurology (AAN)   | ■ Centers for Disease Control and Prevention (CDC)                |
| ■ American Association of Neurological Surgeons (AANS)                              | ■ Congress of Neurological Surgeons (CNS)                         |
| ■ American Association of Neuroscience Nurses (AANN)                                | ■ National Association of EMS Physicians (NAEMSP)                 |
| ■ American College of Emergency Physicians (ACEP)                                   | ■ National Institute of Neurological Disorders and Stroke (NINDS) |
| ■ American Society of Interventional and Therapeutic Neuroradiology (ASITN)         | ■ National Stroke Association                                     |
| ■ American Society of Neuroradiology (ASN)  | ■ Stroke Belt Consortium (SBC)                                    |
| ■ American Stroke Association (ASA), a division of American Heart Association (AHA) | ■ Veterans Administration (VA)                                    |

### Types of Stroke Centers

A **Primary Stroke Center (PSC)** stabilizes and treats acute stroke patients, providing initial acute care.<sup>3</sup> PSCs are able to appropriately use t-PA and other acute therapies such as stabilization of vital functions, provision of neuroimaging procedures, and management of intracranial and blood pressures.<sup>3</sup> Based on patient needs and the hospital’s capabilities, they either admit patients or transfer them to a comprehensive stroke center.<sup>3</sup> As of January 2006 there were 174 PSCs certified by the Joint Commission on Accreditation of Healthcare Organizations in the United States.<sup>16</sup>

**Comprehensive Stroke Centers (CSCs)** stabilize and treat stroke patients at all needed levels of care, even for the most complex strokes. They offer specialized diagnostics and other interventions, include tertiary care centers, and have the infrastructure and personnel necessary for highly technical procedures. In 2005, the BAC published recommendations for the establishment of CSCs.<sup>17</sup>



## FDA-Approved Stroke Treatments

### *Activase® (Alteplase)*

Activase®, commonly known as t-PA or rt-PA, is a tissue plasminogen activator produced by recombinant DNA that aids in the breakup of clots. Activase was approved by the US Food and Drug Administration (FDA) in 1996 for the management of acute ischemic stroke within 3 hours of symptom onset in adults, after exclusion of intracranial hemorrhage by a cranial computed tomography (CT) scan or other diagnostic imaging.<sup>18</sup>

- Activase is the first and only thrombolytic to be indicated for the management of acute ischemic stroke,<sup>18</sup> which affects about 88% of the more than 700,000 people in the United States annually who suffer a stroke.<sup>19</sup> Acute ischemic stroke is the leading cause of disability and the third-leading cause of death in the US.<sup>19</sup>
- All thrombolytic agents increase the risk of bleeding, including intracranial bleeding, and should be used only in appropriate patients. Not all patients with acute ischemic stroke will be eligible for t-PA therapy, including patients with evidence of recent or active bleeding; recent (within 3 months) intracranial or intraspinal surgery, serious head trauma, or previous stroke; uncontrolled high blood pressure; or impaired blood clotting.

Unfortunately, less than half of acute ischemic stroke patients who may be eligible for t-PA therapy receive it during the narrow 3-hour therapeutic window.<sup>3</sup> One key reason for this under-utilization relates to patients' lack of knowledge about stroke symptoms and their inability to get to the hospital in time for treatment. Another reason is the failure of hospitals to adequately and rapidly evaluate stroke patients in order to timely administer t-PA.<sup>20</sup>

### Clinical Studies

In a number of clinical studies, Activase has been shown to be safe and effective, when used within 3 hours of symptom onset in eligible patients to improve outcomes.<sup>18,21</sup> It has the potential to significantly improve morbidity in ischemic stroke patients, including rates of disability.<sup>22-25</sup>

Activase should not be used in patients with intracranial or subarachnoid hemorrhage, recent intracranial or intraspinal surgery, serious head trauma, or a previous stroke. Activase is contraindicated for patients with uncontrolled hypertension at the time of treatment (eg, >185 mmHg systolic or >110 mmHg diastolic), patients with seizure at the onset of stroke, active internal bleeding, intracranial neoplasm, arteriovenous malformation, aneurysm, or known bleeding diathesis.<sup>18</sup> The safety and efficacy of treatment with Activase in patients with minor neurological deficit or with rapidly improving symptoms prior to the start of Activase administration has not been evaluated.

A nationwide clinical trial sponsored by the National Institute of Neurological Disorders and Stroke (NINDS) found that stroke patients treated with Activase within 3 hours of symptom onset were at least 33% more likely to have minimal or no disability after 3 months than those patients treated with placebo.<sup>22</sup>

"A 1995 NINDS study demonstrated that patients treated with t-PA were at least 30% more likely to have minimal or no disability at 3 months as compared with patients given placebo."<sup>22</sup>



The Standard Treatment with Alteplase to Reverse Stroke (STARS) study,<sup>27</sup> a prospective, multicenter study of 389 patients at 57 community medical centers in the United States, found that of stroke patients who received Activase, 35% had “very favorable” outcomes, and 43% were “functionally independent” based on a commonly used scale that measures patient function following a stroke.<sup>27</sup>

“A 5% increase in t-PA use nationwide would mean that about 30,000 additional patients per year would be treated, about 4,000 of those patients would be spared long-term disability, and the net cost savings to the healthcare system would exceed \$100 million annually.”<sup>26</sup>

Ten years following its approval by the FDA, **Activase is the only approved drug for acute ischemic stroke.**

**Activase indication:** Activase® (Alteplase) is indicated for the management of acute ischemic stroke in adults for improving neurological recovery and reducing the incidence of disability. **Treatment should only be initiated within 3 hours after the onset of stroke symptoms, and after exclusion of intracranial hemorrhage by a cranial computerized tomography (CT) scan or other diagnostic imaging method sensitive for the presence of hemorrhage (see CONTRAINDICATIONS in the full prescribing information).**

**Activase safety information:** All thrombolytic agents increase the risk of bleeding, including intracranial bleeding, and should be used only in appropriate patients. Not all patients with acute ischemic stroke will be eligible for Activase therapy, including patients with evidence of recent or active bleeding; recent (within 3 months) intracranial or intraspinal surgery, serious head trauma, or previous stroke; uncontrolled high blood pressure; or impaired blood clotting. Please refer to the Activase full prescribing information.

Activase® is a registered trademark of Genentech, Inc.

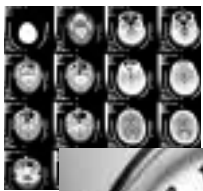
### **MERCI® Retriever**

The MERCI® (Mechanical Embolus Removal in Cerebral Ischemia) Retriever device from Concentric Medical, Inc., was cleared by the FDA in August 2004 as the first device to remove blood clots from the brain of patients with ischemic stroke.<sup>28</sup> The device is a catheter with a coiled tip that is used to grasp a clot so it can be removed.<sup>28</sup>

“(The MERCI retriever is a) novel endovascular embolectomy device (that) can significantly restore vascular patency during acute ischemic stroke within 8 hours of stroke symptom onset and provides an alternative intervention for patients who are otherwise ineligible for thrombolytics.”<sup>29</sup>

Clinical data from the MERCI Trial evaluated use of the device at 25 medical centers in the United States in 141 patients who were ineligible to receive t-PA.<sup>29</sup> Recanalization was achieved in 69 of 151 patients (46%) in the intention to treat analysis, and in 68 of 141 patients (48%) in whom the device was deployed.<sup>29</sup> Clinically significant procedural complications occurred in 10 of 141 patients (7.1%) and symptomatic intracranial hemorrhage was observed in 11 of 141 patients (7.8%). Good neurological outcomes (modified Rankin score ≤2) were more frequent at 90 days in patients with successful recanalization compared with patients with unsuccessful recanalization (46% versus 10%;  $P<0.0001$ ), and mortality was less (32% versus 54%;  $P=0.01$ ).<sup>29</sup> The risks of the MERCI Retriever include bleeding and vessel punctures and it is intended for use by interventional radiologists.<sup>28</sup>

Now let's learn about PSCs...



## PART 1

### GET READY

#### WHAT ARE THE CLINICAL COMPONENTS OF A PSC?

This section will help you explain what resources are needed for your facility to become a PSC. Note that the elements of a PSC are similar to those of a trauma center presented in the Overview.

BAC-Recommended Elements of a PSC <sup>3</sup>	
Patient Care Services	Support Services
Acute stroke team	Commitment and support of medical organization; medical director
Written care protocols	Neuroimaging services
Emergency medical services	Laboratory services
Emergency department	Outcomes and quality improvement
Stroke unit (could be within ICU)*	Continuing medical education
Neurosurgical services	

\*Required only if PSC will provide ongoing in-hospital care for stroke.

The BAC recommendations for a PSC, which are summarized in the tables on Pages 10 and 11, were published in the following article:

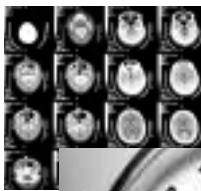
Alberts MJ, Hademenos G, Latchaw RE, et al; for the Brain Attack Coalition. Recommendations for the establishment of primary stroke centers. *JAMA*. 2000;283:3102-3109.<sup>3</sup>

#### PSC Components

The BAC was formed to address the lack of public understanding of stroke and its symptoms and the suboptimal medical support systems for treating this broad-scale disease. To help people who have had a stroke or are at risk for one, the BAC has made the following recommendations for the basic elements of a PSC based on 11 aspects of stroke care.<sup>3</sup> They are grouped into Patient Care Services and Support Services.

**As you read this section, ask yourself these 3 questions:**

1. What PSC components does our hospital already have?
2. Are they sufficient to provide optimal PSC care?
3. Which elements need to be added or improved?



## Patient Care Services<sup>3</sup>

Acute Stroke Team	<ul style="list-style-type: none"> <li>■ Multidisciplinary personnel with expertise in diagnosing and treating CVD; may include neurologist or neurosurgeon (see the detailed list of members in Part 4.V.A, beginning on Page 31)</li> <li>■ Minimum team should include a physician and another healthcare provider (nurse, physician's assistant, nurse practitioner)</li> <li>■ Someone from the team should be available 24/7</li> <li>■ Team should have a logbook to track response times, diagnoses, treatments, and outcomes</li> </ul>
Written Care Protocols	<ul style="list-style-type: none"> <li>■ Designed, adapted, and utilized by the team; should include use of a written protocol for patients eligible to receive intravenous t-PA treatment and other acute therapies such as stabilization of vital functions, provision of neuroimaging procedures, and management of intracranial and blood pressures in the ED</li> <li>■ Goal is to reduce t-PA-related complications such as an increased risk of bleeding, including intracranial bleeding and the effects of uncontrolled high blood pressure or impaired blood clotting</li> <li>■ In eligible patients, t-PA must be administered within 3 hours of acute stroke symptom onset, and a CT scan must be obtained to exclude the presence of ICH</li> <li>■ Protocols should also provide information regarding emergency care of ischemic and hemorrhagic strokes, stabilization of vital functions, initial diagnostic tests, and initial use of medications</li> <li>■ Should be available where stroke patients may be evaluated or treated</li> <li>■ Should be reviewed/updated at least once per year</li> </ul>
EMS	<ul style="list-style-type: none"> <li>■ Collaborative relationship between stroke center and EMS personnel must be integrated to improve services and reduce transport delays</li> <li>■ Calls for possible stroke should be assigned high priority for evaluation and transport</li> <li>■ Educational activities should be offered at least twice a year</li> </ul>
ED	<ul style="list-style-type: none"> <li>■ Personnel should be trained to diagnose and treat all types of acute strokes</li> <li>■ Personnel should know about stroke team and its role</li> <li>■ ED should document performance measures such as time from symptom onset to treatment</li> <li>■ Educational activities for ED staff should occur at least twice a year to reinforce stroke diagnosis and treatment</li> </ul>
Stroke Unit*	<ul style="list-style-type: none"> <li>■ Does not have to be a distinct unit, but must provide continuous telemetry monitoring, written care protocols, and BP monitoring at all times</li> <li>■ Personnel should have expertise in managing CVD</li> </ul>
Neurosurgical Services	<ul style="list-style-type: none"> <li>■ Accessible within 2 hours of facility (patients can be transferred)</li> <li>■ Operating room with necessary personnel and equipment available 24/7</li> </ul>

*\*Required only if PSC will provide ongoing in-hospital care for stroke.*

*BP= blood pressure; CVD=cerebrovascular disease; ED=emergency department; EMS=emergency medical services; ICH=intracranial hemorrhage; t-PA= tissue plasminogen activator.*

### Support Services: Hospital Commitment<sup>3</sup>

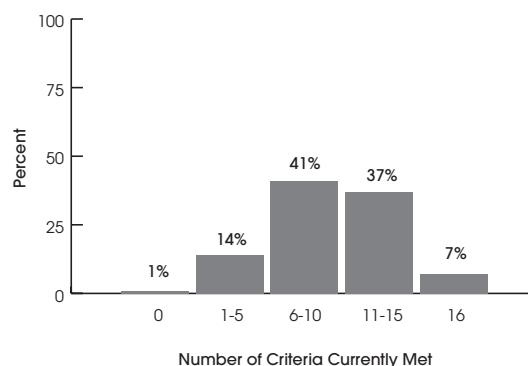
Commitment and Support of Medical Organization	<ul style="list-style-type: none"> <li>■ Stroke center should designate a medical director</li> <li>■ Hospital administration should provide financial, logistical, and political support to garner needed resources</li> <li>■ Importance of hospital administrative support cannot be overemphasized</li> </ul>
Neuroimaging Services	<ul style="list-style-type: none"> <li>■ CT scan or MRI <ul style="list-style-type: none"> <li>◆ Available 24/7</li> <li>◆ Completed within 25 minutes of being ordered</li> <li>◆ Evaluation within 20 minutes</li> </ul> </li> </ul>
Laboratory Services	<ul style="list-style-type: none"> <li>■ Available 24/7</li> <li>■ Completed within 45 minutes of being ordered</li> </ul>
Outcome and Quality Improvement Activities	<ul style="list-style-type: none"> <li>■ Database or registry of stroke patients should be developed, including specific indicators such as performance measures or complication rates</li> <li>■ Benchmarks for comparison should be established (can be selected from treatment guidelines)</li> <li>■ Center should select at least 2 patient-care issues each year</li> <li>■ Prespecified committees should meet at least 3 times a year to review/modify practice patterns</li> </ul>
Continuing Education	<ul style="list-style-type: none"> <li>■ Stroke center personnel involved in patient care should earn at least 8 hours of continuing education credit per year related to CVD</li> <li>■ Stroke center should hold at least 2 programs per year to educate the public about stroke risk factors, symptom recognition, prevention, etc</li> </ul>

CT=computed tomography; CVD=cerebrovascular disease; MRI=magnetic resonance imaging.

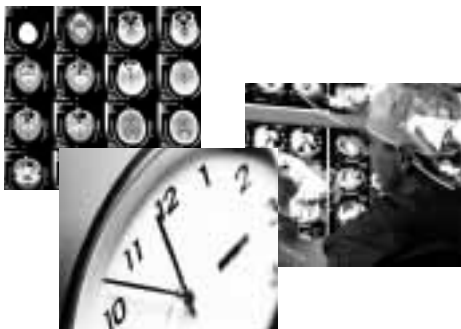
According to a 2003 study of 998 survey respondents<sup>4</sup> including neurologists, neurosurgeons, emergency physicians, and National Stroke Association Stroke Center Network members, 79% believed there was a need for stroke centers and 44% of hospitals met most of the BAC criteria for a PSC (Figure 1).<sup>4</sup> The BAC criteria that were least often met included the presence of a designated stroke unit, a designated medical director, and conducting continuing medical education.<sup>4</sup>

A surprising result of the study is that although 77% of respondents believed that their hospital currently met recommended criteria for a PSC, only 7% actually did meet all recommended elements.<sup>4</sup> When considering your own hospital, you may not be as solid as you think – but you are probably close. Writing a business plan (see Part 4) can help you evaluate areas that need strengthening.

**Figure 1. Number of BAC PSC Criteria Met<sup>4</sup>**



Reproduced with permission of Kidwell CS et al. *Neurology*. 2003;60:1455.



## Quality Improvement and Performance Measures

A key component of improving the quality of stroke care involves monitoring key performance measures that will tell you what your strengths are and what areas need improvement. Determine the goals for your hospital's PSC and select several indicators that will help achieve them. For example, if your goal is to improve quality of care, then you would consider monitoring door-to-needle time, door-to-CT time, the percentage of eligible patients treated with t-PA, clinical outcomes (stroke scale results), the prevention of complications, or customer satisfaction.

"The delivery of high-quality and efficient care for patients with acute stroke is highly dependent on the degree of commitment of the facility, its administration, and personnel."<sup>3</sup>

The PSC certification process will require the monitoring and reporting on specific performance measures. By aligning your goals with these performance measures, you will be able to identify successes and areas where improvement is needed. The JCAHO PSC certification performance measures provide useful benchmarks, particularly if your institution is trying to achieve JCAHO certification.<sup>30-32</sup> (See Part 3, Pages 22-23 for a discussion of PSC certification and performance measures.)

Guidelines for the management and treatment of acute ischemic stroke, including the management of intracranial hemorrhage following treatment with t-PA, can be found in:

Adams HP Jr, Adams RJ, Brott T, et al. Guidelines for the early management of patients with ischemic stroke: a scientific statement from the Stroke Council of the American Stroke Association. *Stroke*. 2003;34:1056-1083.<sup>33</sup>

Adams H, Adams R, Del Zoppo G, Goldstein LB. Guidelines for the early management of patients with ischemic stroke: 2005 guidelines update. A scientific statement from the Stroke Council of the American Heart Association/American Stroke Association. *Stroke*. 2005;36:916-921.<sup>21</sup>

## Written Protocols and Resources

American Stroke Association:  
[www.strokeassociation.org](http://www.strokeassociation.org)

Brain Attack Coalition:  
[www.brainattackcoalition.org](http://www.brainattackcoalition.org)

National Institute of Neurological Disorders and Stroke (NINDS):  
[www.ninds.nih.gov](http://www.ninds.nih.gov)

National Stroke Association:  
<http://info.stroke.org>



## PART 2

### ON YOUR MARK

#### JUSTIFYING A PSC TO HOSPITAL ADMINISTRATION

Now that you understand the components that make up a PSC, this section will help you explain the importance of a PSC to your hospital's administration. This section provides the rationale for a PSC that will help you capture the interest of administration and gain their commitment. It explains how creating a PSC can help your hospital align its practices with a mission of providing the best guideline-based care possible to the community.

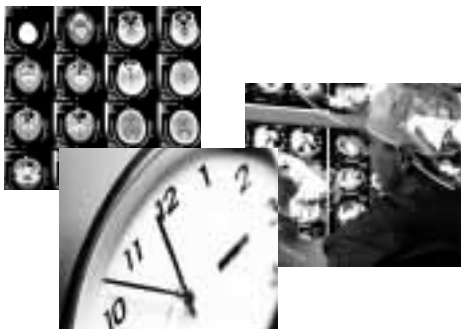
#### Presenting the Benefits of a PSC

Each of the elements presented here should be included as essential components of your business plan (see Part 4). The vast majority of hospitals have some form of stroke protocols and procedures in place. The benefits of expanding these capabilities to meet the BAC recommendations for a PSC will enable your hospital to treat stroke rapidly, ensuring the establishment of standard stroke protocols and the provision of clear benefits to the patient, public health, and potentially a hospital's bottom line.

##### The Key Benefits of a PSC<sup>3</sup>

- ◆ Improved efficiency of patient care
- ◆ Fewer peristroke complications
- ◆ Increased use of acute stroke therapies
- ◆ Reduced morbidity and mortality
- ◆ Improved long-term outcomes
- ◆ Reduced costs to healthcare system
- ◆ Increased patient satisfaction

The next few pages provide more details on the benefits of becoming a PSC...



## The Benefits of Becoming a PSC

### Improved Care and Outcomes

- Hospitals with established stroke centers have demonstrated improved treatment times and better patient outcomes<sup>14,26</sup>
  - ◆ Better able to triage and treat patients rapidly and efficiently
  - ◆ Faster evaluation leads to faster diagnosis and quicker treatment time, which leads to better outcomes
- Written protocols and a highly functional PSC infrastructure improves patient care and speeds access to treatment<sup>14,26,34-40</sup>
  - ◆ Reduced morbidity and mortality
  - ◆ Reduced in-hospital complications related to stroke
  - ◆ Improved functionality and quality of life for the patient
- Use of acute stroke teams improves stroke care and increases appropriate use of stroke therapies, including t-PA<sup>14,34,38,41-44</sup>
  - ◆ Facilitates rapid evaluation and treatment of acute stroke patients
  - ◆ Helps to achieve improved patient outcomes through greater understanding of effective stroke protocols and therapies
- Establishment of a PSC has been associated with increased appropriate use of t-PA for ischemic stroke patients<sup>26</sup>
  - ◆ A community hospital in Bethesda, Maryland, had a 7-fold increase in the proportion of patients receiving t-PA for ischemic stroke 24 months after the hospital established a PSC
- By improving acute ischemic stroke triage and treatment, the presence of a PSC may shorten the length of stay for stroke patients<sup>45</sup>
  - ◆ More t-PA-treated patients were discharged to home than to a rehabilitation or nursing home facility when compared with placebo-treated or untreated patients (48% vs 36%, respectively;  $P=0.002$ )
  - ◆ The average length of stay for t-PA-treated patients was significantly shorter when compared with placebo-treated patients (10.9 days vs 12.4 days, respectively;  $P=0.02$ )
- Presence of a PSC in the ED may help initiate treatments for secondary stroke prevention, thereby reducing the risk of hospital admission
- Rapid, efficient guideline-based stroke care could prevent medical-legal issues, avoiding legal costs and hassles and preventing damage to the hospital's reputation
- EMS will work to coordinate the best care for their stroke patients, bringing patients to the PSC; this will improve patient care<sup>46</sup>

### Increased Revenues/Reduced Care Costs

- Presence of a PSC will reduce the cost of stroke care
  - ◆ Improving stroke care has lead to reduced care costs<sup>13,45</sup>
  - ◆ Increasing use of t-PA for eligible patients would result in healthcare cost savings<sup>47</sup>
  - ◆ Better outcomes mean shorter length of stay<sup>45</sup>
  - ◆ Improving coordination of care reduces duplication of efforts and redundant diagnostic testing
- A PSC will increase use of hospital departments and services — including radiology, laboratory services, emergency medicine, neurology, neurosurgical services, and physical/occupational therapy — which may result in increased revenues
- Positions hospital to participate in stroke clinical trials
- In states that offer “charity care” funds for specific patient populations, an increase in stroke patients who fall into this patient category may draw additional state funding for a hospital
- For nonprofit hospitals, the addition of a PSC may help support fundraising efforts
- Any performance-based incentive system that payors adopt may include stroke patient outcomes as one of the factors that determine reimbursement levels
- Adding a specialized center can boost employee pride and satisfaction
  - ◆ Increases motivation and staff retention
  - ◆ Saves money on recruiting and training

### ■ New enhanced diagnosis-related group (DRG) code for stroke reimbursement

- ◆ DRG 559 (Acute Ischemic Stroke With Use of Thrombolytic Agent)<sup>48,49</sup>

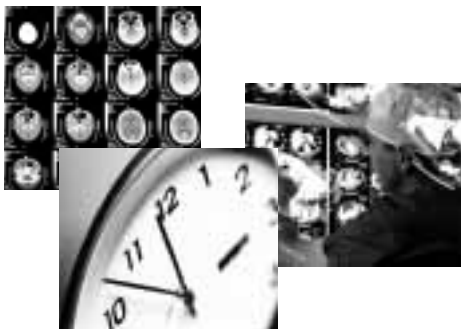
### ■ Other stroke DRG codes<sup>50-52</sup>

- ◆ DRG 014 (Intracranial Hemorrhage and Stroke With Infarction)
- ◆ DRG 015 (Nonspecific CVA and Precerebral Occlusion Without Mention of Infarction)
- ◆ DRG 524 (Transient Ischemia)

*CVA=cerebrovascular accident.*

### Greater Institution Esteem/Better Marketability

- Certification as a PSC demonstrates compliance with national standards and performance measurement expectations, indicating high-quality stroke care
- A higher level of stroke care services builds the reputation, esteem, and competitive position of a hospital
- Having the most advanced stroke care services in your area can attract patients who traditionally patronize other hospitals
  - ◆ Gives your hospital a competitive advantage
  - ◆ Provides an avenue for marketing initiatives
  - ◆ Increases patient volume in the ED and across other departments (cardiology, neurosurgery, outpatient rehabilitation services)
  - ◆ Leads to increased revenues



### Improved Contractual Arrangements

- PSC certification may help obtain contracts from payors and purchasers who are concerned with controlling costs and improving productivity
- Improved treatment time and reduced costs can lower costs to managed care organizations. A hospital can leverage this benefit when negotiating managed care contracts

### Conforming to Legal Requirements

- Increasingly, states are requiring EMS personnel to bypass hospitals that do not meet state requirements for stroke care; PSC certification will draw EMS traffic to the facility
- EMS and regional healthcare officials will recognize the benefit of triaging and will direct stroke patients to such facilities<sup>3</sup>

## A Recent Study Demonstrates Improvement in Performance Measures

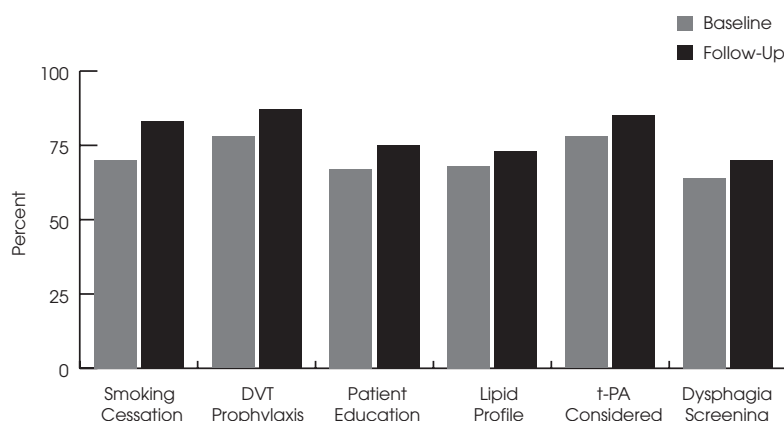
### Benefits of JCAHO Certification<sup>53</sup>

- ◆ Strengthens community confidence in care, treatment, and services
- ◆ Provides a competitive edge in the marketplace
- ◆ Improves risk management and risk reduction
- ◆ Provides education on good practices to improve business operations
- ◆ Provides professional advice and counsel thereby enhancing staff education
- ◆ Can attract and retain quality personnel
- ◆ Validates compliance with nationally recognized standards
- ◆ Recognized by insurers and other third parties
- ◆ Can fulfill regulatory requirements in select states

JCAHO certification is based on achieving certain performance measures determined by the stroke community to be good measures of a hospital's stroke success. These include helping patients quit smoking, using deep vein thrombosis (DVT) prophylaxis, educating patients about stroke, considering t-PA therapy for ischemic stroke, screening for dysphagia, performing lipid profile measurements, discharging patients on antithrombotics when needed, treating atrial fibrillation with anticoagulants, and providing a plan for rehabilitation of stroke patients.<sup>30</sup> (See Part 3, Pages 22-23, for a complete discussion of PSC certification and JCAHO performance measures.)

Alberts and colleagues<sup>54</sup> recently surveyed JCAHO-certified PSCs to determine the characteristics of certified PSCs and assess changes in a number of disease performance measures at the PSCs. The study showed that most JCAHO-certified stroke centers are medium to large community hospitals with hundreds of stroke patients admitted per year.<sup>54</sup> It also showed that JCAHO-certified PSCs demonstrate significant improvements in many of the disease performance measures that were developed to improve patient care (Figure 2 and Table 1).<sup>54</sup> Data from this study may be used to help overcome resistance to establishing a PSC in your hospital.

**Figure 2. Achievement of Disease Performance Measures Before and After JCAHO Certification<sup>54</sup>**



DVT=deep vein thrombosis; JCAHO=Joint Commission on Accreditation of Healthcare Organizations; t-PA=tissue plasminogen activator.

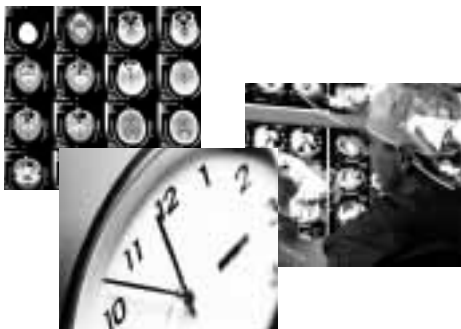
Adapted from Alberts MJ et al. International Stroke Conference. Poster P311.

**Table 1. Improvements in Disease Performance Measures After JCAHO Certification<sup>54</sup>**

Disease Performance Measure	Percent of Increase	P Value
Smoking cessation	13.6	0.004
DVT prophylaxis	8.2	0.01
Patient education	7.5	0.01
t-PA considered	6.5	0.09
Dysphagia screening	5.9	0.07
Lipid profiles	5.1	0.01
Discharge on AT	4.1	0.02
Atrial fibrillation on AC	1.7	0.9
Plan for rehabilitation	1.6	0.01

AC=anticoagulation; AT=antithrombotic; DVT=deep vein thrombosis; JCAHO=Joint Commission on Accreditation of Healthcare Organizations; t-PA=tissue plasminogen activator.

Adapted from Alberts MJ et al. International Stroke Conference. Poster P311.

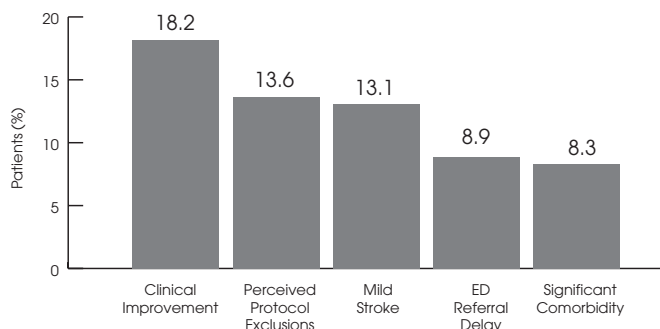


## Helpful Stroke Facts

The following national statistics, trends, and gaps in current stroke treatment are convincing facts to support the creation of a PSC and should be incorporated in your business plan:

- Stroke is the third leading cause of death in the United States after heart disease and cancer<sup>55</sup>
- Nearly 1 in 15 deaths in 2003 were the result of stroke<sup>2</sup>
- By 2015, the annual incidence of stroke is expected to reach 1.1 million<sup>56</sup>
- Activase® (Alteplase) is the only FDA-approved drug for acute ischemic stroke<sup>18</sup>
- Approximately 88% of all strokes are classified as ischemic stroke<sup>2</sup>
- t-PA can reduce disability in ischemic stroke patients<sup>22,23</sup>
- t-PA must be administered within 3 hours of symptom onset;<sup>18</sup> rapid response is essential
- Delay in getting the patient to the hospital is the #1 reason for missing the therapeutic 3-hour window for administering t-PA<sup>20</sup>
- Many patients who arrive within the 3-hour window lose the opportunity to benefit from t-PA due to unnecessary protocol exclusions and ED delays (Figure 3)<sup>20</sup>

**Figure 3. Major Reasons for Exclusion of Eligible Patients From Receiving t-PA Treatment<sup>20</sup>**



*Barber PA, et al. Neurology. 2001;56:1015-1020.*

"Delay occurred in the emergency department during triage, contacting of the stroke team, obtaining a CT scan, and deciding on initiating therapy. Education of all emergency department personnel...(is) essential."<sup>20</sup>

"(An) area of focus is clinicians' conservative interpretation of eligibility criteria for thrombolysis... (and issues of) ...CT exclusion to treatment... (leading to protocol exclusions)."<sup>20</sup>



*For more stroke statistics and information on stroke demographics, please refer to:*

American Heart Association (AHA). *Heart Disease and Stroke Statistics — 2006 Update*. Dallas, Tex: American Heart Association; 2006. Available at: <http://216.185.112.5/downloadable/heart/1136308648540Statupdate2006.pdf>.<sup>2</sup>

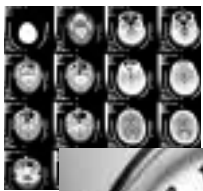
Centers for Disease Control and Prevention (CDC). *Atlas of Stroke Mortality: Racial, Ethnic, and Geographic Disparities in the United States*. Atlanta, Ga: Department of Health and Human Services; January 2003. Available at: [http://www.cdc.gov/cvh/maps/strokeatlas/atlas\\_download.htm](http://www.cdc.gov/cvh/maps/strokeatlas/atlas_download.htm).<sup>57</sup>

### What Are the Next Steps?

Look at the issues presented in this section and ask yourself these 4 questions:

- What important stroke treatment elements does your hospital already have?
- What components will enable your hospital to treat stroke patients more rapidly?
- What components will allow standard stroke protocols to be established?
- Which of your hospital's capabilities could be expanded upon to meet the BAC recommendations?

Keep these things in mind as you review Part 3 and start preparing to draft your business plan.



## PART 3

### GET SET

#### IMPORTANT CONSIDERATIONS

Now that you have reviewed the benefits of a PSC, this section will help you focus on your hospital and show you how to get started while you prepare to draft the business plan. You will work with other members of your hospital community to learn how your hospital can improve care and outcomes, increase revenue, improve esteem and marketability, explore improved contractual arrangements, and comply with legal requirements.

You will have to consider your hospital setting, understand stroke center certification requirements, review the impact a stroke center will have on hospital services, and overcome potential barriers to becoming a PSC. As you move through this section, be sure to assess all of your hospital's strengths and weaknesses. This will help you to be better prepared to draft a convincing business plan (see Part 4).

#### Getting Started: Establish a Development Committee

As the leading advocate for a PSC, your role will be to spearhead the establishment of a center, beginning with the formation of a core PSC development committee. The initial steps in this process are to gather information, to communicate with key people who will be involved in the initiative, and to rally internal support.

The PSC development committee may begin by meeting weekly to assess current stroke care at the hospital, build a case for establishing a PSC, and steer its development and operation. The committee would be responsible for an internal assessment of the current stroke care infrastructure, as well as methods to streamline stroke treatment procedures, costs, and other elements needed to establish a PSC.

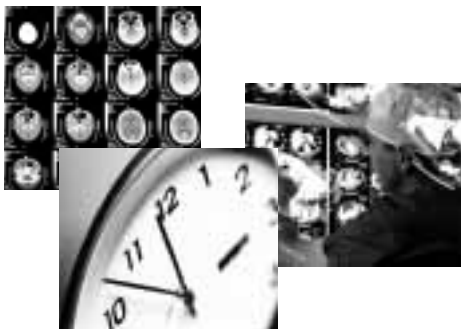
The background information required includes stroke statistics, hospital data, community demographics, assessment of your hospital's current stroke care, and the capabilities of competitors within your hospital's catchment area. This information will form the basis of a business plan, the fundamental document to be presented to administration and any other key players involved in the decision to establish a PSC (see Part 2 for useful facts). Detailed information about preparing a business plan is addressed in Part 4.

#### Review Your Hospital Setting

Although hospital types differ, many have the ability to further improve care for acute ischemic stroke. Most hospitals fall into 1 of 3 categories: tertiary care hospital, community hospital, or rural hospital. This section outlines the ability of hospitals to provide specialized or complex stroke care services and their relation to other hospital types.

##### *Tertiary Care Hospitals*

Tertiary care hospitals are likely to possess most of the capabilities necessary to become a PSC, including having written stroke protocols and a neurologist as well as neuroimaging and neurosurgical services available 24/7 and within the required timeframe. Tertiary care hospitals may be able to serve as a hub for stroke care, receive patients from hospitals that lack experience with stroke, and work in close coordination with local EMS personnel. These hospitals may also have rehabilitation services available and may even be capable of providing long-term care.



### ***Community Hospitals***

Community hospitals may possess many of the capabilities required for PSC certification. In fact, most of the first hospitals that received JCAHO certification as PSCs were community hospitals, not academic or tertiary care hospitals. However, in some cases, a community hospital may not be able to offer around-the-clock services such as neurosurgical backup. They are less likely than tertiary care hospitals to provide rehabilitation or long-term care services on site.

### ***Rural Hospitals***

Rural hospitals are even less likely to have neurological imaging and neurosurgery capabilities available 24/7 than community or tertiary care hospitals. However, they may have an excellent ability to coordinate with larger hospitals to transfer stroke patients. Although they may utilize some form of written stroke protocols, there is an opportunity to expand the use of those protocols and treatment to improve patient outcomes. Some successful strategies developed to enhance the ability of some rural hospitals to function as a PSC include telemedicine and teleradiology.

#### **Telemedicine in Stroke Care**

Telemedicine for stroke or "*Telestroke*" enables community and rural hospitals to link to stroke experts through real-time telephone, Internet lines, or videoconferencing.<sup>58</sup> Telemedicine consultation provides diagnostic and treatment options not previously available at the remote hospital.<sup>59</sup> It enables ED doctors to consult with stroke experts about the administration of t-PA, which has been shown to be feasible and safe in eligible patients.<sup>59</sup> Preliminary studies have also demonstrated that telemedicine systems are technically feasible for CT scan interpretation (*teleradiology*) and in-depth evaluation of acute stroke patients.<sup>3</sup> *Hub and spoke telemedicine systems* can link a stroke center as the "hub" with hospitals lacking adequate stroke center services as the "spokes."<sup>60</sup>

For more information on telemedicine visit the American Telemedicine Association Web site at [www.atmeda.org](http://www.atmeda.org).

## **Consider Stroke Center Certification**

### ***JCAHO Certification***

The BAC recommendations form the basis of the disease-specific care (DSC) certification offered by JCAHO.<sup>31</sup> Stroke center certification is voluntary and based on the following fundamental concepts<sup>61</sup>:

- Providing standardized coordinated care based on the BAC recommendations
- Supporting self-management activities
- Enabling tailored treatment and intervention for individual patient needs
- Promoting the flow of information across settings and providers, while protecting center rights, security, and privacy
- Facilitating analysis and using data to continually improve treatment plans
- Evaluating ways to improve performance and clinical practice

All organizations seeking JCAHO DSC certification for stroke must use these standardized performance measures in order to meet the performance measurement requirements for certification. Minimum requirements for organizations seeking DSC certification for stroke are required and include collection and use of data for the initial 4 standardized stroke performance measures for stroke certification.<sup>30</sup>

**Initial JCAHO Standardized Stroke Performance Measures<sup>30</sup>**

- Deep vein thrombosis prophylaxis
- Discharge on antithrombotics
- Anticoagulation therapy for patients with atrial fibrillation
- Demonstration that t-PA was considered

**Additional JCAHO Standardized Stroke Performance Measures<sup>30</sup>**

- Antithrombotic medication within 48 hours of hospitalization
- Lipid profile during hospitalization
- Screen for dysphagia
- Stroke education
- Smoking cessation
- Demonstration that rehabilitation plan was considered

For more information on JCAHO primary stroke center certification visit [www.jcaho.org](http://www.jcaho.org).

Access to a detailed *Stroke Performance Measurement Implementation Guide* can be found at [http://www.jcaho.org/dscc/psc/guide\\_table.htm](http://www.jcaho.org/dscc/psc/guide_table.htm).

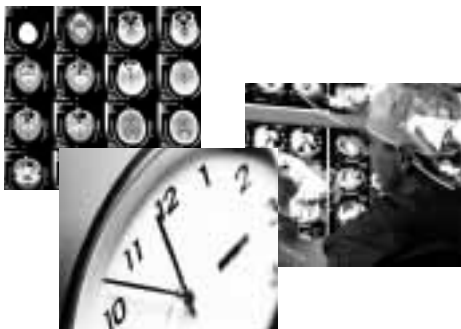
### ***State-Based Certification***

A state's department of health may provide stroke center certification. State stroke certification, which is on the rise, requires that a hospital meet strict guidelines for treating patients who present with stroke symptoms. One requirement for state certification is that hospitals must demonstrate acute ischemic stroke patients are treated in a timely manner with thrombolytics. There are currently approximately 200 state-certified PSCs nationwide (Alberts MJ, personal communication; February 23, 2006).

To help influence stroke care in Massachusetts, state staff developed the Massachusetts Department of Public Health (MDPH) hospital licensure regulations authorizing the Department's Division of Health Care Quality to designate hospitals with primary stroke services as stroke centers;<sup>62</sup> in 2004 the MDPH announced state regulations for PSCs.<sup>63</sup> Using these guidelines to become a state-certified PSC, a hospital must have a department-designated service and point-of-entry plan for regional EMS. Point-of-entry plans include an EMS algorithm directing ambulances to hospitals with a designated PSC. In addition, hospitals would participate in a data collection program to help evaluate and improve stroke care.<sup>63</sup>

**"This new (Massachusetts Department of Public Health) program in stroke certification is a great opportunity to improve the care of stroke patients across the entire Commonwealth."<sup>64</sup>**

October 1, 2004  
Lee H. Schwamm, MD  
Associate Director  
Massachusetts General Hospital  
Acute Stroke Services



The New York State Department of Health has established regulations to certify designated stroke centers within the state to improve standards and access to quality of care for patients with a presumptive diagnosis of stroke.<sup>65</sup> The EMS community plays an important role in implementing these stroke centers, similar to the role they play in state-designated trauma centers.<sup>65</sup> The New York State program is designed to help provide appropriate therapy to stroke patients, to follow the BAC recommendations, and to parallel the efforts in other states.<sup>66</sup>

Other states are working to establish their own guidelines for certification of stroke centers and some are establishing legislation directed to emergency stroke care and centers. In 2004 the Florida legislature passed the *Florida Stroke Act* mandating the creation of a public list of PSCs and CSCs in Florida, and establishing guidelines substantively similar to JCAHO certification standards to certify stroke treatment centers within the state.<sup>67</sup> Then, in the spring of 2005, the Texas State Senate and House passed legislation mandating a statewide stroke emergency transport plan and stroke facility criteria known as the *Emergency Healthcare Act*.<sup>68</sup> This legislation also helps to ensure that EMS providers transport stroke victims to a hospital capable of providing the latest stroke treatments.<sup>62</sup>

## **PSC Will Impact Hospital Services**

Creating a PSC will impact your hospital on a number of levels. You should address these factors in your business plan and be prepared to address them in meetings with hospital administrators. A PSC will influence the following areas:

### ***Resource Allocation***

Important decisions regarding how the distribution of funds and other resources must be made if your hospital needs to purchase expensive equipment, hire more staff, or expand bed capacity to create a PSC; however, if the appropriate equipment and staff are already available, changes may only be necessary with regard to how staff time is spent in transitioning more staff hours into a stroke team.

### ***Interdepartmental Collaboration***

Some departments may be required to contribute their staff time or funds to develop and support the PSC. Gaining buy-in and commitment from the departments involved in stroke care will involve a shift in staff mentality that is critical to the success of a PSC. A business plan should clearly define the rationale for a PSC and highlight how the hospital and these departments will benefit from this type of support. For those hospitals that have already made the departmental capital and human resource investments required for a PSC, a business plan demonstrates how increased patient volume will maximize return on investment (ROI). For hospitals requiring additional investment in capital or human resources, a business plan demonstrates how all departments may benefit from PSC capability.

### ***Need for Staff Education***

Any new practice within a hospital must be clearly defined for the staff involved, and ongoing training is necessary. If your hospital applies for JCAHO PSC certification, it will need to demonstrate this training in addition to offering ongoing continuing education opportunities for staff. Coordinate this with your in-house training department.



### ***Changes in Patient Volume and Demographics***

Depending on your community, promoting a PSC and strengthening relationships with EMS will bring more stroke patients to your hospital. It is also possible that your hospital will start to service different patient groups based on how stroke manifests itself through demographic characteristics. Carefully evaluate your hospital's ability to provide ancillary services to address stroke risk factors.

### ***Impact on Contracting Should Payor Mix Change***

If your patient volume and demographics shift, it is likely that your payor mix will be impacted. Investigating the payor mix within the community will help prepare your hospital for any changes. If the payor mix does shift, your hospital may consider a new strategy for contracting with payors.

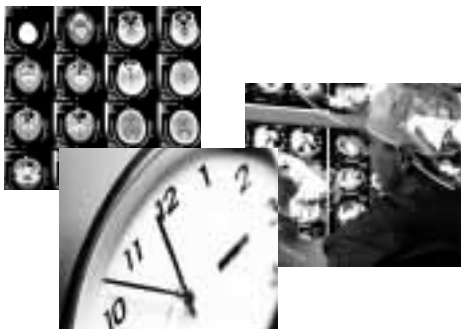
### ***Potential Opportunities for Ancillary and Other In-Hospital Services***

A hospital that creates a PSC is poised to develop additional services for postacute stroke treatment, such as home healthcare and outpatient rehabilitation. Whether these are opportunities for your hospital requires further investigation, but when developed in conjunction with a PSC, they can create a well-rounded offering of care for stroke patients that can be used to market your hospital's services. In addition, early diagnosis and management of stroke patients may allow for the use of other life-saving medical services such as increased imaging, surgical interventions, and other medical interventions. All of these potential opportunities may provide avenues to generate additional revenues.

## **Overcoming Potential Barriers**

Certain factors can stall or prevent the success of a PSC. Identifying potential barriers prior to beginning the process and addressing these barriers creates a more convincing argument to become a PSC. Some potential barriers to establishing a PSC may include:

- **Hospital Finances** – A hospital administration with a tight budget may not feel it has the resources to support a PSC. Consider creating the initial stroke center on a shoestring budget and monitor its impact on profit and loss. If the center has helped the bottom line, these data support a staged investment plan.
- **Relationship With EMS** – Building a strong relationship with and providing stroke education to local EMS personnel is crucial to success because they often control where a stroke patient receives care. A collaborative, positive relationship will impact the patient volume your hospital receives and can support your ability to provide exceptional care. For example, encouraging EMS to call your hospital's ED while transporting a stroke patient will alert the team so that it can prepare and meet the stroke patient upon arrival.
- **Lack of Interdepartmental Collaboration** – By building a strong case for a PSC and meeting with the parties involved in its creation, you will begin the process of obtaining buy-in from the various hospital departments involved with stroke care. Having the support and commitment from multiple departments will strengthen the stroke center and the care it delivers, as well as generate support from hospital administrators and community members.



- **Lack of Expertise** – Some providers may have had limited exposure to stroke treatment protocols and how to treat stroke patients, whereas others may be confused by the data on thrombolytic use and bleed rates. Providing continuing education programs and staff in-service programs on stroke care protocols, t-PA administration, and after-care practice will help transition your current stroke care to stroke center level treatment. You may also want to consider hiring staff who have this expertise or who can collaborate with colleagues from other stroke centers to share knowledge.
- **Shortage of Neurologists** – There is a shortage of neurologists when compared with the number of hospitals in the United States. Neurologists play a key role on an acute stroke care team and the BAC provides guidance regarding alternative means for treating acute stroke in the absence of an on-site neurologist.<sup>3</sup> Telemedicine may also play a role in addressing this shortage and can provide remote neurological expertise to support on-site ED staff. With today's higher reimbursement for stroke care and the cost savings a stroke center provides, hospitals can more easily pay neurologists a stipend for PSC services.
- **Brief Window of Opportunity** – The primary reason acute ischemic stroke patients are not treated with a thrombolytic is that they arrive outside the treatment window of 0–3 hours after symptom onset. Ongoing collaboration and communication with your local EMS personnel can help increase the number of patients who arrive at the hospital within this treatment window. Many national organizations (AHA, ASA, NINDS, and National Stroke Association) as well as community organizations are working to educate the public about recognizing stroke symptoms to reduce this problem. Your institution may consider a local, public awareness campaign as well.

National Stroke Association also provides EMS training through *Stroke Rapid Response*<sup>™</sup>, which is a train-the-trainer program used by EMS instructors when educating EMS professionals to accurately identify and expedite transport of stroke patients.<sup>69</sup>

## PART 4

### GO!

## PULLING IT ALL TOGETHER: WRITING THE BUSINESS PLAN

Now you are ready to take all you have learned in the previous sections and apply it while writing the business plan. A business plan will help you build a case for a PSC by demonstrating its value to the hospital and the community and serving as a guide to its formation and operation. It is an essential document to be presented to administration and other decision makers when proposing a PSC. The business plan also serves as the road map to establishing and operating the PSC. Your core PSC development committee can help you gather data to be used when drafting the business plan.

### Key Sections of the Business Plan

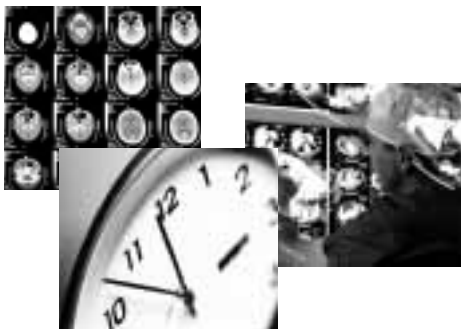
- I. Executive Summary
- II. Needs Assessment
- III. Brief Description of a PSC
- IV. Benefits of a PSC: Social and Financial Value Propositions
- V. Required Resources
- VI. Financial Justification
- VII. Funding
- VIII. Marketing Communications Plan
- IX. Quality Improvement and Performance Measures
- X. Succession Strategies — What's Next?
- XI. Timeline
- XII. Cost-Revenue Spreadsheet

The plan should begin with an assessment of the hospital's current stroke system and unmet needs for improved stroke care in the community. Some hospitals may be more open than others to the idea of forming a PSC for budgetary reasons or in response to the hospital's defined mission statement. Understanding what drives hospital priorities and attitudes toward stroke will help you position the benefits of improved stroke care and establishing a PSC as a priority.

### I. Executive Summary

The executive summary concisely summarizes the contents of the business plan, making a persuasive case for a PSC and highlighting key points of the plan. It briefly explains how a stroke center will benefit your hospital and community, what key actions must be taken early on, the required investments and performance measures, the timeframe for establishing a PSC, and the expected results.

Similar to an abstract of a medical article, the executive summary can be written last, after the basic plan has been drafted, and should be about 1 to 3 pages in length.



## II. Needs Assessment

This portion should provide an analysis and supporting arguments demonstrating the needs assessment for a PSC at your facility. It should include a market assessment of the overall need for a PSC in the community based on both the demographics and population trends. This section should also provide an analysis of the competitive landscape surrounding your facility, focusing on other area hospitals and the services they provide.

**Remember in Parts 1 and 2, we discussed the benefits of a PSC and its components? As you move through this section, think about the answers to these questions:**

- Are there gaps in your hospital's ability to provide optimal care? Concisely assess/describe stroke services at your hospital, focusing on areas of need.
- Is stroke center certification a requirement in your state or will it soon be?

### A. Market Assessment

Analyze market size, demographics, and trends in the community as well on the national level.

- ◆ How many people live in your hospital's catchment area?
- ◆ What is the age breakdown, population growth rate, demographic trends (especially the growth of aging population)?

By comparing trends and demographics of the local population to your stroke patient demographics, you can estimate growth opportunities. Knowing the demographics of the local population will also help you create a marketing plan to target particular market segments.

#### Items to consider:

- ◆ Population in catchment area
- ◆ Population growth rate
- ◆ Racial/ethnic/age composition of catchment area population and expected growth rates
- ◆ Average household income trends
- ◆ Current stroke incidence rates
- ◆ Trend of stroke incidence rates for the recent past 12 months
- ◆ Breakdown according to types of stroke and their projected growth rates

### B. Competitive Landscape

Conduct an analysis of the other hospitals in your area to determine the need for improved care in your community:

- ◆ What is the level of services other hospitals provide for stroke?
- ◆ What market share do they currently own and what drives it?
- ◆ What are their long-term goals and plans for delivering stroke care?

There may be a large unmet need in your community for stroke care, providing an opportunity to increase your hospital's overall market share by drawing local patients to your center and maintaining customer loyalty through a PSC. It is also possible that competitor hospitals will partner with you to provide more comprehensive stroke care, working together to create synergies and grow the marketplace.

### Items to consider:

- ◆ Number of competitor hospitals and level of care at each
- ◆ Services offered by competition
- ◆ Market share of competition
- ◆ Assess competitor goals, if possible
- ◆ Identify strengths and weaknesses of competition compared to those of your hospital, as well as threats from competitors

### *C. Analysis of Current Stroke Care*

Concisely describe stroke services at your hospital. Assess strengths, weaknesses, opportunities, and threats (SWOT) related to your hospital's current stroke care through a detailed "SWOT analysis". For example:

#### **Strengths**

- ◆ Hospital currently has most services and equipment in place
- ◆ Capability of providing improved stroke care

#### **Weaknesses**

- ◆ Lack of adequate staff (be specific)
- ◆ Difficult to allocate staff time
- ◆ Redundancy of work orders

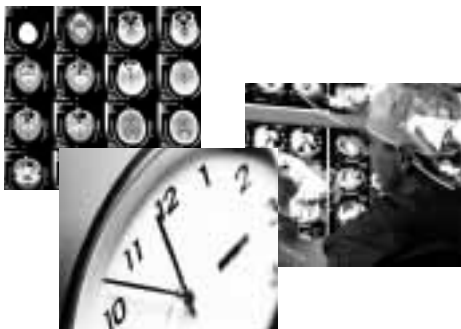
#### **Opportunities**

- ◆ Maintain stroke patients who otherwise would go to another hospital that is a PSC
- ◆ Prospectively build patient volume by x%
- ◆ Expand use of other hospital services
- ◆ Establish positioning as a leading local hospital
- ◆ Capture loyalty of growing senior population
- ◆ Improve efficiencies and revenues

#### **Threats**

- ◆ Neighboring hospitals have been established as PSCs or CSCs
- ◆ Losing staff due to competition
- ◆ Potential barriers that could impede success (see list in Part 3, Pages 25-26)

Use the ideas generated through the SWOT analysis to make a concluding statement that advocates for a PSC.



### III. Brief Description of a PSC

Explain the functioning and role of a PSC. A PSC is certified by JCAHO or, in some cases, a state department of health and has the required infrastructure and protocols in place to stabilize and provide initial acute stroke care. The PSC provides rapid, optimal, and efficient care to stroke patients. Explain how the certified PSC would be a more integrated, efficient system of stroke care, benefiting patients and the hospital. Services would be provided by a well-organized stroke care team that follows regularly updated written protocols to provide optimal care and efficiency. Remember that JCAHO disease-specific state certification will likely require the center to be operational around the clock.

Briefly propose and describe a PSC as an effective solution to meet the needs listed above in 1 or 2 paragraphs.

### IV. Benefits of a PSC: Social and Financial Value Propositions

#### Do you recall the key benefits of a PSC from Part 2?

- ◆ Improved care and outcomes
- ◆ Increased revenues/reduced care costs
- ◆ Greater institution esteem/better marketability
- ◆ Improved contractual arrangements
- ◆ Conforming to legal requirements

This is a key section for persuading hospital decision makers to establish a PSC; it should demonstrate how the PSC will improve efficiencies and care, increase revenues, and build the hospital's reputation as a high-quality facility. Incorporating details related to the defined benefits of a PSC into the business plan and applying them to your facility's situation will help you get a thumbs-up from administration.

It is important to support each point with specific details related to your hospital. To help you get started, list the services your hospital offers in

relation to stroke care and what else is needed to qualify as a PSC. Also, you need to ensure that your stroke patient volume meets the minimum JCAHO requirements if you plan to apply for JCAHO certification. Go back to Part 2 to help you define the benefits of a PSC in your business plan. The section can be divided into two parts: Social Value Proposition and Financial Value Proposition.

#### A. Social Value Proposition

Include the non-financial benefits of a PSC provided in Part 2 of the guide and be sure to highlight the following:

- One BAC recommendation incorporating a social value proposition states that hospital personnel who follow written protocols improve outcomes; improved outcomes mean a better quality of life for patients
- Another BAC recommendation is the assessment and identification of acute ischemic stroke patients who are eligible to receive t-PA, the only FDA-approved drug for acute ischemic stroke
- Creating a PSC helps your hospital align its practices with a mission of providing the best guideline-based care possible to the community



## ***B. Financial Value Proposition***

The financial value proposition justifies to hospital administration that a PSC will help your hospital improve efficiencies, save costs, and/or increase revenues.

When developing your financial value proposition, look for opportunities to create synergies between services to improve efficiency and save costs. Suggest ways to eliminate duplication of effort and streamline employee workload. Examine performance measures that can be used to help your hospital create efficiencies and maximize the ROI of existing resources.

Consider monitoring average length of stay for a stroke patient, the average cost per stroke patient (total cost, admission cost, discharge cost, and diagnostic cost), the charge per stroke patient, diagnostic utilization, bed utilization, and complications (for example, pulmonary embolism, deep vein thrombosis, pneumonia, and urinary tract infection).

- ◆ For a detailed discussion of ways to provide financial justification for a PSC, see Section VI.
- ◆ Use the spreadsheet in the Appendix to demonstrate revenues and costs over time, and to project when the center is expected to reach breakeven or better.

## **V. Required Resources**

This section details the type of dedicated resources needed to create a PSC. They are described below in 4 categories: human resources, hospital administration support, equipment and supplies, and training and education.

### **Essential hospital services involved in stroke care:**

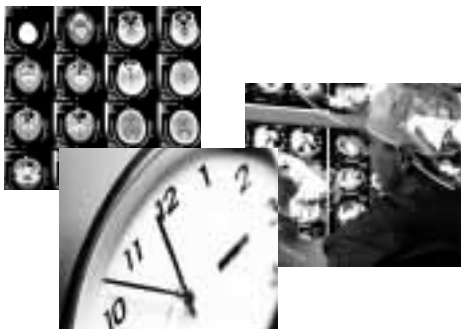
- ◆ Emergency medicine
- ◆ Neurology
- ◆ Neurosurgery
- ◆ Laboratory services
- ◆ Radiology
- ◆ Interventional neuroradiology
- ◆ Rehabilitation services

### **A. Human Resources**

**1. Stroke Champion.** A stroke champion can be a physician or nurse who typically specializes in either neurology or emergency medicine.

#### **Responsibility**

The stroke champion spearheads the efforts to establish and operate a PSC, builds up enthusiasm and support for the stroke cause, and works to overcome barriers to creating a PSC. The stroke champion garners support from each area involved in treating stroke, leads the stroke center development team, and seeks any funding needed from the hospital administration.



**2. Acute Stroke Team.** This patient care team of providers, who either work at or are affiliated with the hospital, dedicate at least a portion of their time to stroke at the hospital, and make stroke care their priority. Key stroke team members may also serve on the PSC development committee. You may want to note who they are in your business plan.

#### **Responsibility**

- ◆ Provide and coordinate patient care
- ◆ 24/7 availability
- ◆ Review/update written care protocols at least once per year to ensure they are promoting optimal collaboration and fostering efficiency
- ◆ Provide training on a continuing basis for new staff and for all staff each time a protocol is updated

The stroke team typically consists of the following personnel who are involved in acute stroke care:

- ◆ Neurologist
- ◆ Emergency medicine physician
- ◆ Nurse coordinator

Additional stroke team members may include:

- ◆ Neurosurgeon or neurointerventionalist
- ◆ Lab technician
- ◆ Radiology administrator
- ◆ Radiologist
- ◆ Pharmacist
- ◆ Social worker
- ◆ Rehabilitation specialist
- ◆ Administrative assistant

**3. Part-Time/Full-Time Nurse Coordinator.** A PSC will require the allocation of dedicated nurse time. Although the amount of time a nurse coordinator would have to devote will depend on the hospital's patient volume and specific needs, hospital administration support for this dedicated time is essential. Additional nurse funding might be needed to staff the center, depending upon current staffing levels, number of beds, expected growth of the stroke population, etc.

#### **Responsibility**

Handle issues related to the center, such as education, continuous quality improvement, and monitoring performance measures.

**4. Stroke Team Administrative Assistant.** Much of the work involved in organizing and running a stroke center is administrative. A PSC should have a nurse coordinator (see above) and/or an administrative assistant who dedicates all or a portion of their time to the stroke center.

#### **Responsibility**

To coordinate logistics and handle administrative needs, such as scheduling in-service programs, organizing team meetings, obtaining necessary equipment and services, and collecting data.

- 5. Medical Director.** As a key member of the stroke care team, the Medical Director should communicate and strengthen the hospital's relationship with local EMS, keeping them informed about the PSC and working to develop protocols for rapid response to stroke patients. This helps increase stroke patient volume, and create community awareness that the hospital has a stroke center.

**Responsibility**

In addition to providing medical care, the director works to strengthen the hospital's relationship with local EMS and improve coordinated care.

- 6. Hospital Quality Improvement Staff.** The vital work of ensuring that the hospital monitors and achieves quality improvement is carried out by staff who monitor important indicators such as length of stay, degree of patient disability, and cost of discharge.

**Responsibility**

To provide data that enables the stroke center to examine the progress and impact of stroke care.

***B. Hospital Administration Support***

- 1. Stroke Center Development Committee.** This section should include proposed development team members and approximate the amount of staff time required. Team members might include hospital administrators, members of the acute stroke team, and support staff for the acute stroke team.

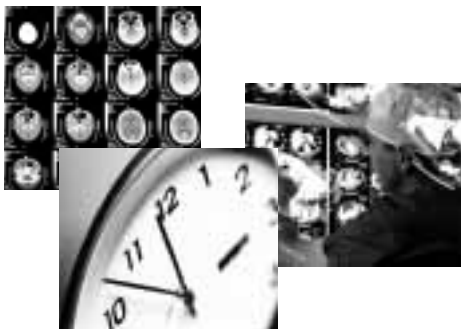
**Responsibility**

- ◆ Plans the establishment of the stroke center
- ◆ Provides input for the business plan
- ◆ Determines stroke education needs for hospital staff and the general community
- ◆ Organizes a system for communication and rapid action when a stroke patient presents to the hospital
- ◆ Coordinates marketing and outreach, ensuring bed availability and, if needed, purchasing equipment and supplies

- 2. Protocols and Procedures.** The stroke team should review written protocols at least once per year to ensure they are promoting optimal collaboration, care, and efficiency. Training should be held for new staff on a continuing basis and for all staff each time a protocol is updated.

- 3. Tracking Patient Progress and Outcomes.** By monitoring indicators such as length of stay, degree of patient disability, and cost of discharge, a hospital can examine the progress of its stroke care and identify strengths and areas for improvement. The information can also serve as a mechanism for setting goals and gauging the success of the stroke center.

- 4. Systemwide Coordination.** Creating a stroke center and stroke team requires multidisciplinary coordination, not only within a hospital but also within a community. To be most effective, a "stroke system" ensures that local hospitals and other healthcare providers, as well as emergency medical technicians (EMTs) and paramedics, are aware of the stroke center's location and that treating stroke requires rapid action.



### ***C. Equipment and Supplies***

This section should provide a list of the required equipment, indicating those items that will need to be purchased or supplied for the PSC. For example:

- ◆ Available beds for stroke treatment
- ◆ Stroke team beepers necessary to coordinate rapid response
- ◆ Computed tomography (CT) scanner
- ◆ Lab services to run tests for monitoring patient status
- ◆ A teleradiography machine may be necessary to transmit CT scans to neurologists or radiologists when they are not on site

### ***D. Training and Education***

A program must be in place that provides physicians and nurses with appropriate, ongoing education and training on stroke, stroke treatment, evidenced-based medicine, and new developments in therapeutic treatments. This section should describe additional training/education programs needed for a PSC. Also, in order for providers to gain experience and improve efficiency and quality of stroke care, they must see an adequate volume of stroke patients to feel comfortable treating stroke.

## **VI. Financial Justification**

### ***A. Internal Financial Audit***

In Section IV.B we addressed the concept of the Financial Value Proposition. As mentioned above, the financial value proposition serves to demonstrate to hospital administration that a PSC will help improve efficiencies, save costs, and/or increase revenues. The first step in determining whether your hospital has the potential to manage a successful PSC is to conduct an internal assessment of hospital operations and finances around stroke. The cost-revenue spreadsheet in the Appendix outlines an itemized breakdown of revenues and expenses, plus projections for subsequent years with a PSC. Examine hospital records to respond to the questions listed below, and focus on the opportunities to reduce costs, increase revenues, and improve patient outcomes. Project changes in costs and revenues with a PSC.

#### ***1. How many stroke patients does the hospital admit per year?***

If the stroke population is small, there may not be sufficient volume to justify a stroke center unless significant growth is anticipated. If the stroke population is large (>200 patients per year), then becoming a stroke center may actually save the hospital money through improved outcomes and reduced loss of income.

#### ***2. What is the patient mix in terms of stroke type as well as payor mix?***

Hemorrhagic stroke patients requiring surgical intervention often enhance revenues. What percentage of stroke patients are on Medicaid, Medicare, or private insurance plans?

**3. What are the hospital's revenues for acute stroke treatment by payor mix? How will increasing Medicare patients affect your projections?**

What percentage of stroke patients are on Medicaid, Medicare, or private insurance plans? Calculate payments received from Medicare, managed care, private patients, and for the uninsured. Considering the aging population, Medicare may become a greater percentage of the payor mix and may change the proportion of payments. How will this affect revenues?

As a population ages, Medicare becomes a greater proportion of the payor mix. If more seniors join Medicare managed care organizations, the proportion of prospective payments in stroke DRGs may change. If the patient population comprises patients who are members of Medicare and managed care plans that have prospective payment systems, reducing length of stay will be important to a hospital's finances.

If patients are primarily members of managed care plans that reimburse on a per-diem basis or if patients pay out-of-pocket, reducing length of stay may not be a primary goal of the hospital.

**4. What are the incremental revenues? How will they change with a PSC?**

Calculate revenues from ancillary services offered, such as interventional cardiology, and add any grants. Looking at the breakdown of all revenues, consider trends and potential changes with a PSC — are there opportunities to increase revenues further? Provide a comparison of departmental revenues with and without a PSC.

**5. What are your fixed and variable costs? What additional costs and opportunities to save money will there be with a PSC?**

Indicate total cost of resources as well as length of stay durations (average daily cost). Examining average length of stay may help gauge opportunities for tightening patient flow and reducing costs. Try to demonstrate when reducing length of stay is financially advantageous.

**6. What are the incremental expenses?**

Add expenses for the incremental services listed under revenues, plus any other expenses. Examining the breakdown of expenses may indicate opportunities to save costs through greater efficiencies.

**7. What are the growth projections if your hospital establishes a PSC?**

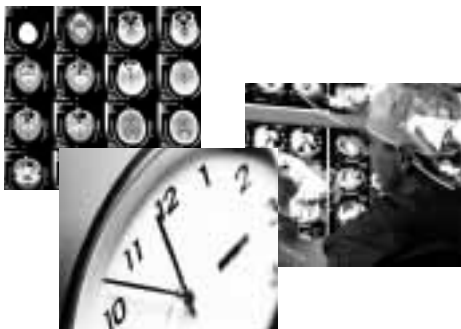
Project changes in revenues and expenses for the subsequent 2 years if your hospital is planning to become a PSC. Consider costs of additional resources, potential increase in patient flow, and cost efficiencies with a PSC. When will the hospital reach the breakeven point?

**8. Is the hospital making money on stroke? If so, how much and why? Is there an opportunity to increase revenues further?**

Look at average length of stay to gauge opportunities for tightening patient flow.

**9. Is the hospital losing money on stroke? If so, how much and why? Is there an opportunity to improve efficiencies or turn a profit?**

Demonstrate any opportunities to become more proficient and efficient in stroke care. For example, by reviewing diagnostic utilization for different types of stroke, a hospital can confirm that the appropriate tests are being ordered and that services are not being duplicated.



## VII. Funding

A stroke center can receive a range of financial support, depending on the hospital's resources and willingness to allocate them. Some stroke centers have a lean stroke team and little budget to hire full-time staff, whereas others have staff dedicated solely to treating stroke. Regardless of the team's complexity, providing funds for stroke team administrative support is critical due to the amount of coordination and evaluation involved in running a stroke center.

The costs associated with maintaining a stroke team in 1998 averaged between \$5,000 and \$10,000 per year.<sup>3,70</sup> Depending on the availability and distribution of resources, a hospital could spend upwards of \$50,000 to \$500,000 to build and staff a stroke unit.<sup>3</sup> However, many hospitals already have the major elements of a stroke center or stroke unit in place and do not need to make new investments. In reality, most PSCs probably spend an additional \$25,000 to \$70,000 per year to staff and operate their stroke center, although this may vary significantly among various facilities. It is important to remember that increased reimbursement rates for stroke care may allow hospitals to more easily pay neurologists a stipend for PSC services.

In the funding section of your business plan, it is important to address both the ROI — a financial ROI in services to patients — and how the PSC will help the hospital meet its goals. Conducting research in a therapeutic area can secure additional funding, aggregate more information on continuous quality improvement, and generate enthusiasm.

## VIII. Marketing Communications Plan

This section briefly describes the basic communication strategies that will be used to build awareness of the PSC, provide community education, and elevate the reputation of the hospital by having this center. A PSC may be attractive to patients. Your marketing and public relations representatives can work with you to prepare this section, and will be ultimately responsible for developing and implementing a marketing/public relations plan when administration approves the PSC. Costs would be allocated to the PSC or marketing budget, depending on your hospital's policy.

National Stroke Association has numerous patient and community education brochures, booklets, and fact sheets available online at <http://info.stroke.org>.

If you are interested in receiving a complimentary copy of the *Stroke Center Local Awareness* kit on CD-ROM, forward an e-mail request, including your name, your hospital name, complete address, and your daytime telephone and fax numbers to [eharrison@mcspr.com](mailto:eharrison@mcspr.com). You can also visit [www.activase.com](http://www.activase.com) and click on Professional Resources for Stroke. This kit contains a wealth of publicity materials to foster community awareness about your hospital's stroke service, introduce the media to the urgency of stroke, and educate patients about the signs, symptoms, and appropriate reaction to stroke.

Note: Institutions requesting this resource must be certified by JCAHO or the state governing body of public health.



### **A. Marketing to the Patient Community**

- Communications about the upcoming PSC opening will generate interest in the PSC and should include publicity in the local media that announces plans for the center, who is on the development committee, or a major donation to fund the center. Communications may also include writing articles for the hospital's newsletters
- PSC opening activities might include publicity in local media, a ribbon-cutting event, having the hospital's medical spokesperson appear on local radio and TV shows, direct mail, articles in the hospital newsletter, and/or advertising
- Ongoing publicity for the center might include case histories/testimonials of stroke success stories highlighting patients who were saved due to rapid response and treatment
- Community outreach program to educate people about the symptoms of stroke and rapid response may be realized through publicity, health fairs, or public service announcements (PSAs). PSAs are generally pre-taped short segments for radio or TV that are distributed to local stations. PSAs often air at no charge when there is available air time. The hospital would incur the production and distribution costs. This outreach could be ongoing
- Depending on your budget, advertising in local media such as radio, newspapers, billboards, and transit signs will spread the word about the PSC

### **B. Marketing to Local Medical Services**

- The ED director should communicate with local EMS personnel to make them aware of the PSC and encourage them to bring patients to the center
- Communication with other nearby hospitals could be fostered to provide partnership arrangements regarding stroke patients

## **IX. Quality Improvement and Performance Measures**

### **Some performance measures and systems for monitoring change:**

- ◆ Length of stay
- ◆ Cost/charge per stroke patient
- ◆ Diagnostic/bed utilization
- ◆ Clinical outcomes
- ◆ Eligible patients treated
- ◆ Time data
- ◆ Prevention of complications
- ◆ Customer satisfaction

Explain how the PSC will establish and record quality improvement (eg, registry and chart review). List the performance measures that will be used to monitor any changes in outcomes. This helps build confidence in the center's continuing level of high-quality care and commitment to the business plan. (See section IX, Page 45 of the Business Plan Worksheet for a more detailed list.)

### **Access help for collecting data from...**

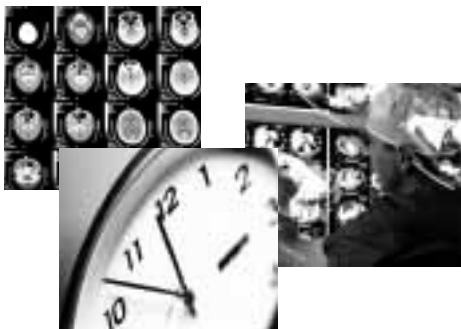
ASA at [www.strokeassociation.org](http://www.strokeassociation.org)

*Get With the Guidelines — Stroke*<sup>71</sup>  
*Primary Stroke Center Certification Program*<sup>72</sup>

JCAHO at [www.jcaho.org](http://www.jcaho.org)

*Stroke Performance Measurement Implementation Guide*<sup>31</sup>





## X. Succession Strategies — What's Next?

If the stroke center is a success, what comes next? This section of your plan fortifies your proposal for a PSC by illuminating potential opportunities once the institution has proven its success in becoming a PSC.

### A. Network Facilitator

As a network facilitator, your PSC will become a resource for other hospitals and stroke champions. The network facilitator becomes a leader in developing an entire system of regional PSCs. The hospital can create a stroke system to educate providers, to accept complex cases, and to accept transfers for primary treatment from other institutions.

### Information to help understand and establish stroke systems of care can be found in:

Schwamm LH, Pancioli A, Acker JE 3rd, et al; American Stroke Association's Task Force on the Development of Stroke Systems. Recommendations for the establishment of stroke systems of care: recommendations from the American Stroke Association's Task Force on the Development of Stroke Systems. *Circulation*. 2005;111:1078-1091.<sup>73</sup>

### B. Interdisciplinary Center

Another option expands beyond stroke and includes stroke as a key part of an interdisciplinary center. Such centers could include stroke and become a neuroscience center to include specialized treatment for epilepsy, movement disorders, headaches, etc. Another option would be to develop a vascular medicine center. In this case, vascular surgery, cardiovascular care, neurosurgery, and/or interventional radiology services could be combined with stroke care. Developing an interdisciplinary center enhances continuous quality improvement in an exponential way through coordination among disciplines.

### C. Center of Excellence

If the PSC is positioned as a Center of Excellence, the numerous benefits the institution could gain include greater financial benefit to the hospital, increased involvement in clinical trials, and additional funding and grant money for the center due to its reputation.

### D. Comprehensive Stroke Center

Over time, if your hospital develops more advanced, specialized care for patients with serious cardiovascular disease, your PSC may be able to become a CSC, which treats stroke patients at all needed levels of care. It requires healthcare personnel with specific expertise in various disciplines (neurosurgery, vascular imaging), advanced neuroimaging capabilities, surgical and endovascular techniques, and other elements, such as an intensive care unit and stroke registry.

## XI. Timeline

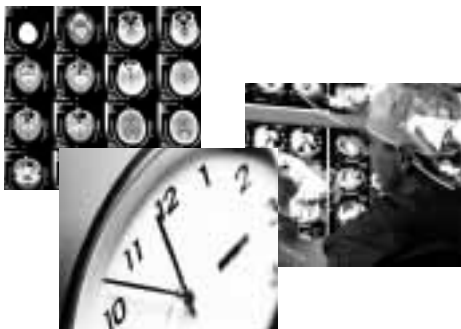
Depending on the level of resources available and the types of changes your hospital must make, a PSC can be created quickly within a matter of months or incrementally over a 1- to 3-year period. A timeline will help set expectations and can be used as a guide for your hospital's efforts.

## XII. Cost-Revenue Spreadsheet

Refer to the Cost-Revenue Spreadsheet in the Appendix as a resource to help evaluate the financial impact of a PSC over time. (A description of the spreadsheet appeared in Section VI.A.)

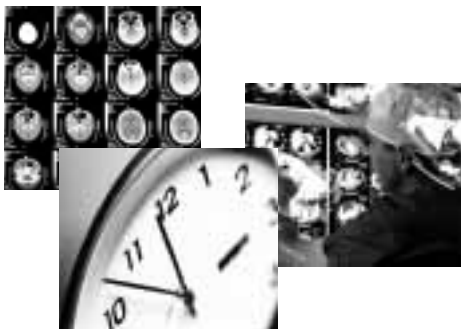
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## APPENDIX

### Business Plan Worksheet

#### *I. Executive Summary*

Summarize key points of your plan, including how a PSC will benefit your hospital and community. Briefly review required resources, financial and social value, performance measures, and expected results.

#### *II. Needs Assessment*

Assess your market and levels of stroke care at other hospitals in your area; need for improved stroke care in your community and at your hospital; and identify specific gaps in your hospital's current stroke care.

##### Market Assessment

- Population in catchment area
- Racial/ethnic/age composition of catchment population
- Population growth rates
- Current and past stroke incidence rates
- Determine future stroke incidence trends and how they may change in the future
- Breakdown of types of stroke and their projected growth rates
- Current payor mix

##### Competitive Landscape

- Number of competitor hospitals, level of stroke care at each
- Market share of competition
- Assessment of competitors' goals
- Identify threats from competition, as well as competitors' strengths and weaknesses
- Existing collaborations and financial relationships between institutions
- Referral patterns

##### Analyze Your Hospital's Stroke Care

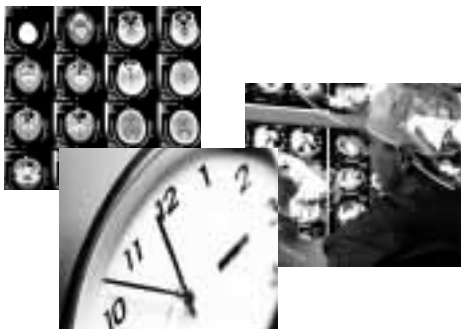
- Outline strengths, weaknesses, opportunities, threats (SWOT) analysis
- Identify gaps for meeting PSC requirements

#### *III. Brief Description of a PSC*

Define a PSC and provide a brief description of what you are proposing.

#### *IV. Benefits of a PSC: Social and Financial Value Propositions*

- Social Value Proposition: the non-financial benefits of a PSC
- Financial Value Proposition: improve efficiencies, save costs, and/or increase revenues
- Include estimated timeline for when center is expected to reach breakeven or better



## ***V. Required Resources***

**Human Resources** – List staff members needed and responsibilities of each

- Stroke Champion
- Acute Stroke Team
- Nurse Coordinator
- Stroke Team Administrative Assistance
- Medical Director

### **Hospital Administrative Support**

- Stroke Center Development Team
- Protocols and Procedures
- Tracking Patient Progress and Outcomes
- Systemwide Coordination

### **Equipment and Supplies**

- Available beds for stroke treatment
- CT scanner
- Teleradiography equipment
- Lab services

### **Training and Education**

- Ongoing continuing education/training for medical staff on stroke care
- EMS education programs

## ***VI. Financial Justification***

**Internal Financial Audit** — Current financial picture, changes with a PSC

- Determine approximate number of stroke patients per year
- Current payor mix, trends and growth rates
- Calculate revenues by payor mix
- Calculate incremental revenues
- List fixed and variable costs
- List incremental expenses
- Provide growth projections for subsequent 2 years
- Is the hospital making or losing money on stroke. Why?
- Average cost per stroke case
- Average length of stay for stroke
- Outcomes and performance measures



- Current use and distribution of resources, resource needs for PSC
- Identify any inefficiencies in current stroke treatment, eg, duplication of diagnostics and protocols, length of stay versus average cost of treating stroke

## ***VII. Funding***

Funding needed for a PSC and additional sources of funding. Include estimated potential for reduction in costs and/or increase in revenues, as well as market potential and return on investment.

## ***VIII. Marketing Communications Plan***

Briefly describe communications strategies to build awareness of PSC, provide community education, and elevate hospital reputation.

**Marketing to Patients** — Public relations, advertising, etc.

**Marketing to Local Medical Services** — Building relationships with EMS and local hospitals

## ***IX. Quality Improvement and Performance Measures***

List performance measures and systems for monitoring changes in outcomes; some examples include:

- Length of stay
- Cost per stroke patient (total cost, admission cost, discharge cost, diagnostic cost)
- Charge per stroke patient
- Diagnostic utilization
- Bed utilization
- Clinical outcomes — stroke scale results
- Percentage of eligible patients treated
- Time data (eg, door-to-needle time, door-to-CT time)
- Prevention of complications such as pulmonary embolism, deep vein thrombosis, pneumonia, urinary tract infection
- Customer satisfaction

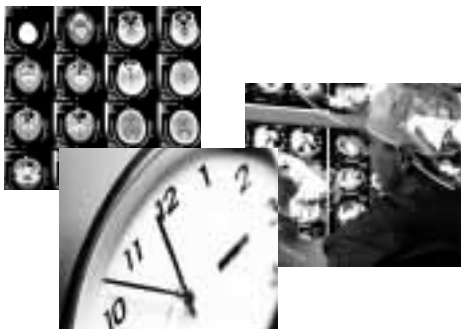
## ***X. Succession Strategies — What's Next?***

Opportunities when the hospital has proven its success as a PSC:

- Network Facilitator
- Interdisciplinary Center
- Center of Excellence
- Comprehensive Stroke Center

## ***XI. Timeline***

Describe a planned timeline of actions using milestones to illustrate completion of a PSC. Remember the PSC development team described in Part 3? Make sure you assign each team member the appropriate elements on the timeline.



## Cost-Revenue Spreadsheet

Breakdown the costs and revenues of stroke care to show projected changes over the next 3 or 4 years.

REVENUES	2003	Growth Projection*	2004	Growth Projection	2005	Growth Projection	2006
<i>By Payer Mix (for acute stroke treatment)</i>							
Medicare							
DRG payment x number of Medicare stroke pts							
Managed Care (MC)							
Reimbursement x number of MC stroke pts							
Private							
Payments received							
Uninsured							
Number of uninsured pts x cost to treat (-)							
<i>Incremental Revenues</i>							
Interventional cardiology							
Payment x number of pts treated							
Neurosurgery							
Payment x number of pts treated							
Home health care							
Average payment x number of pts treated							
Long-term rehabilitation							
Average payment x number of pts treated							
<b>TOTAL REVENUES</b>							
* All growth projections should be entered into the spreadsheet as 1 + percentage of growth expectation, eg. 1.03 if 3% growth is expected.							
EXPENSES	2003	Growth Projection	2004	Growth Projection	2005	Growth Projection	2006
<i>Fixed Costs</i>							
Staffing							
Equipment							
Operations							
Beds							
<i>Variable Costs</i>							
Length of stay							
Average length of stay x average daily cost							
Marketing/promotion							
Training							
<i>Incremental Expenses</i>							
Interventional cardiology							
Expense x number of pts treated							
Neurosurgery							
Expense x number of pts treated							
Home health care							
Average expense x number of pts treated							
Long-term rehabilitation							
Average expense x number of pts treated							
<b>TOTAL EXPENSES</b>							
<b>BOTTOM LINE</b>							



