

# **Hospital Based Secondary Prevention**

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**AZ Cardiovascular Disease State Plan**

**Operation Stroke**  
*The Phoenix Experience*

**Establishing a Comprehensive Stroke  
Program, Implementing a Primary Stroke  
Center Matrix, and Developing a Quality  
Assurance Program**

# Operation Stroke

- A nationwide American Stroke Association initiative implemented in 1999.
- Two major goals:
  - Reorganize stroke services to provide better acute stroke care across the USA.
  - Implement OS in the top 125 MSAs by 2003.

# *The Stroke Chain of Survival*



*All links will be strong...*

# **Operation Stroke and Primary Stroke Center Classification in Phoenix**

# Primary Stroke Centers

PSC's provide appropriate acute stroke management:

- Rapid distinction between ischemic stroke and ICH
- IV tPA for appropriately selected patients
- Identify, and manage, arrhythmia's, hypotension, fever, and hyper & hypoglycemia
- Dedicated care in geographically identified Stroke Units has been shown to reduce stroke mortality and morbidity
- ***Initiate secondary stroke prevention treatment***

# Phoenix Primary Stroke Center Initiative

A collaborative effort between **Operation Stroke** and **Arizona Emergency Medicine Systems (AEMS)**

- Regular meetings between members of the OS Executive Committee and the AEMS Categorization Committee

## Recommendations for the Establishment of Primary Stroke Centers

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**D**ESPITE SIGNIFICANT ADVANCES in its diagnosis, treatment, and prevention, stroke remains a common disorder. An estimated 700 000 to 750 000 new and recurrent strokes occur each year in the United States,<sup>1,2</sup> and as the population ages, the number of patients with stroke may increase. The lifetime costs of stroke exceed \$90 000 per patient for ischemic stroke and more than \$225 000 for subarachnoid hemorrhage.<sup>3</sup> The extreme sensitivity of neuronal tissue to even brief periods of ischemia mandates that stroke be treated as a medical emergency.<sup>4,5</sup>

However, many hospitals do not have the necessary infrastructure (personnel and equipment) and organization required to triage and treat patients with stroke rapidly and efficiently. In one recent study, 66% of hospitals surveyed

For editorial comment see p 3125.

**Objective** To develop recommendations for the establishment and operation of primary stroke centers as an approach to improve the medical care of patients with stroke.

**Participants** Members of the Brain Attack Coalition (BAC), a multidisciplinary group of representatives from major professional organizations involved with delivering stroke care. Supplemental input was obtained from other experts involved in acute stroke care.

**Evidence** A review of literature published from 1966 to March 2000 was performed using MEDLINE. More than 600 English-language articles that had evidence from randomized clinical trials, meta-analyses, care guidelines, or other appropriate methods supporting specific care recommendations for patients with acute stroke that could be incorporated into a stroke center model were selected.

**Consensus Process** Articles were reviewed initially by 1 author (M.J.A.). Members of the BAC reviewed each recommendation in the context of current practice parameters, with special attention to improving the delivery of care to patients with acute stroke, cost-effectiveness, and logistical issues related to the establishment of primary stroke centers. Consensus was reached among all BAC participants before an element was added to the list of recommendations.

**Conclusions** Randomized clinical trials and observational studies suggest that several elements of a stroke center would improve patient care and outcomes. Key elements of primary stroke centers include acute stroke teams, stroke units, written care protocols, and an integrated emergency response system. Important support services include availability and interpretation of computed tomography scans 24 hours everyday and rapid laboratory testing. Administrative support, strong leadership, and continuing education are also important elements for stroke centers. Adoption of these recommendations may increase the use of appropriate diagnostic and therapeutic modalities and reduce peristroke complications. The establishment of primary stroke centers has the potential to improve the care of patients with stroke.

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did not have stroke protocols, and 82% did not have rapid identification for patients experiencing acute stroke.<sup>6</sup> This shortcoming is further demonstrated by the experience with tissue-type plasminogen activator (tPA) as a stroke therapy. The approval of intravenous tPA as the first treatment for acute ischemic stroke was a landmark event,<sup>7</sup> yet a recent study in the Cleveland, Ohio, area found that only 1.8% of patients with ischemic stroke received this agent.<sup>8</sup> Nationally, only 2% to 3% of patients with stroke are being treated with tPA. Reasons for this low rate include patient presentation beyond the re-

quired 3-hour treatment window, clinicians' concerns about bleeding complications, and the inability of some medical systems to triage and evaluate such patients rapidly.<sup>9,10</sup>

One approach for addressing the need for improvements in the medical infrastructure involved in stroke care is the establishment of stroke centers.<sup>11,12</sup> Stroke centers could mirror the

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**Table 1. Major Elements of a Primary Stroke Center**

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## Patient care areas

- Acute stroke teams
- Written care protocols
- Emergency medical services
- Emergency department
- Stroke unit\*
- Neurosurgical services

## Support services

- Commitment and support of medical organization; a stroke center director
- Neuroimaging services
- Laboratory services
- Outcome and quality improvement activities
- Continuing medical education

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\*A stroke unit is only required for those primary stroke centers that will provide ongoing in-hospital care for patients with stroke.

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# Modified Primary Stroke Center Criteria

- Physician experienced in giving tPA for stroke present at the time that tPA is administered (*this should preferably be a neurologist*).
- *Neurologist available 24/7 to see patient within 45 minutes of being called.*

# Modified Primary Stroke Center Criteria

- *Ongoing stroke QA/QI process in place.*
- The Stroke Center has a steering committee that oversees the provision of stroke management services, **QA/QI processes**, and education programs.

# Phoenix Primary Stroke Center Initiative: *Timeline*

## 2001-2002

- Stroke center surveys conducted by both OS and AEMS based on modified PSC criteria
- Help provided to hospitals that needed assistance to meet PSC criteria
- Results of surveys presented to Phoenix hospitals 3-02

# Phoenix Primary Stroke Center Initiative

## April 2003

- Site visits commence for hospitals requesting to be included in the AEMS PSC Matrix
- Site visit teams consisted of two members of the OS Executive Committee (MD, Allied Health) and a member of the AEMS Categorization Committee

# Phoenix Primary Stroke Center Initiative

- *April – July 2003*

Five hospitals classified as PSC's

- *August 2003*

Proposal presented to, and accepted by, the AEMS Board to implement a limited PSC Matrix in early September 2003

# Phoenix Primary Stroke Center Initiative

May 2006

- Eight hospitals classified as Primary Stroke Centers based on the local certification process.

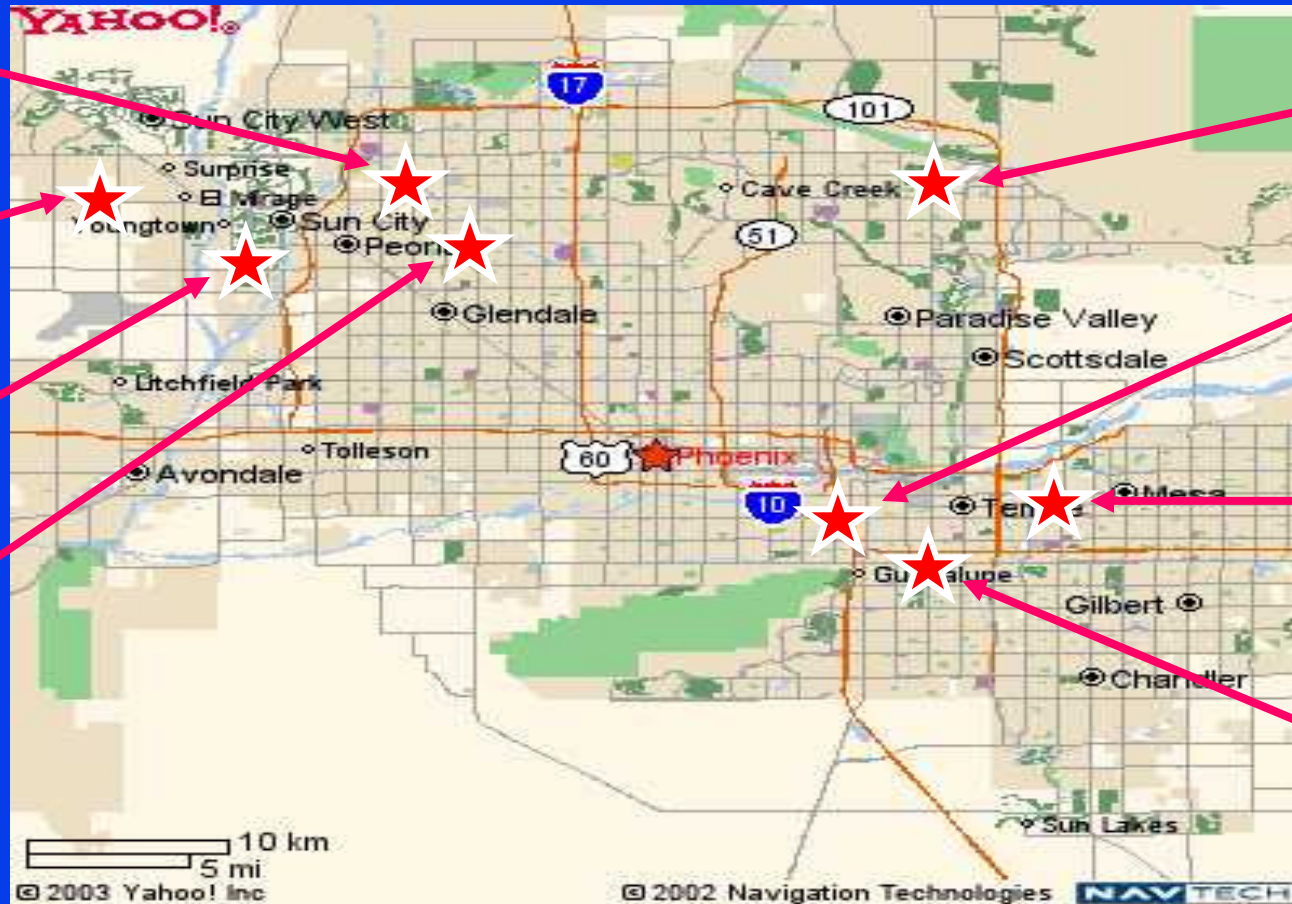
# Phoenix Primary Stroke Center Matrix

Arrowhead

Del Webb

Boswell

Banner  
Thunderbird



Mayo  
Hospital

BNI -- St.  
Joseph's

SMH  
Osborn

Banner  
Good  
Samaritan

# Phoenix Primary Stroke Center Matrix

- As of **7/1/2009** the Joint Commission PSC certification and recertification process will be used to certify and recertify all PSCs in the Phoenix PSC Matrix
- PSC Matrix membership is conditional on hospitals submitting tPA quality measures data.
- PSC Matrix hospitals are committed to sharing JC quality measures data including secondary prevention treatment measures.

<i><b>Hospital</b></i>	<i><b>PSC</b></i>	<i><b>GWTG</b></i>
Mayo Clinic	Y	Y
Del Webb	Y	Y
St. Joseph's/BNI	Y	Y
Arrowhead	Y	Y
Scottsdale Healthcare – Osborn	Y	Y
Banner Boswell		Y
Banner Good Samaritan	Y	Y
Banner Thunderbird	Y	Y
Banner Desert		Y
Banner Estrella		Y
Banner Baywood	---	Y
Phoenix Baptist	---	Y
John C Lincoln	---	Y

# JOINT COMMISSION

## 2008 PSC Stroke Performance Measures

### ***1. Antithrombotic therapy by end of hospital day two***

- % of ischemic stroke patients who receive antithrombotic therapy by the end of hospital day two.

### ***2. Discharged on antithrombotics***

- % of ischemic stroke patients prescribed antithrombotic therapy at discharge

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## 2008 PSC Stroke Performance Measures

### 3. *Discharged on cholesterol lowering therapy*

- % of ischemic stroke patients with lipid disorders (LDL  $\geq$  100 mg/dl or LDL not measured or on cholesterol reducer prior to admission) who are discharged on cholesterol reducing therapy.

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## 2008 PSC Stroke Performance Measures

### 4. *Patients with atrial fibrillation receiving anticoagulation therapy administered*

- % of ischemic stroke patients with atrial fibrillation (paroxysmal or persistent) on anticoagulation therapy at discharge

### 5. *Smoking cessation advice/counseling*

- % of ischemic stroke patients with a history of smoking cigarettes (any cigarettes in the last year) who receive smoking cessation or counseling at, or prior to, discharge.

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## 2008 PSC Stroke Performance Measures

### 6. Assessed for rehabilitation (a new 'old' measure)

- % of ischemic stroke patients who were assessed for, or received, rehabilitation services at, or prior to, discharge.

### 7. **Stroke education**

- % of ischemic stroke patients (or their caregivers) who received education or educational materials at, or prior to , discharge.

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## 2008 PSC Stroke Performance Measures

### 8. Thrombolytic therapy administered (new measure)

- % of ischemic stroke patients arriving within 2 hours of stroke symptom onset who receive thrombolytic therapy.

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## 2008 PSC Stroke Performance Measures

### **9. *Deep vein thrombosis (DVT) prophylaxis***

- % of non-ambulatory ischemic stroke patients who start receiving DVT prophylaxis by the end of hospital day two.

### **10. *Dysphagia screening***

- % of ischemic stroke patients who undergo a screen for dysphagia before receiving any food, fluids, or medication by mouth.

# Phoenix Stroke Initiative

## *Future Directions & Challenges*

- Increase the number of PSC & GWTG hospitals in Phoenix
- Utilize collaboration between hospitals to conduct best practices workshops to increase the number of hospitalized stroke patients who receive appropriate secondary stroke prevention management.

**QUESTIONS??**