



## ***Stroke Care 2006: Clinical Consensus and Opportunities***

### ***Stroke in the Prehospital and ED Settings:***

#### ***When Should EMS triage & Inter-hospital Transfer Occur?***

When should stroke patients in the EMS setting be triaged to specialized stroke centers?

When should interhospital transfer of stroke patients from EDs to stroke centers occur?

### ***Stroke Patient and New Stroke Therapies Assessment:***

#### ***ED NIHSS Use & Stroke Scales Use in Assessing ED Stroke Therapies***

What is the role of the NIHSS in the ED evaluation and treatment of ischemic stroke patients?

How can stroke scales be simply utilized by practitioners in order to assess the clinical effectiveness of ED ischemic stroke therapies?

### ***Stroke Care within the 3 Hour Window for IV tPA Use:***

#### ***Why tPA? And if Not, What Alternatives?***

What is the optimal use of tPA given its reported efficacy and clinical effectiveness?

If a stroke patient is within three hours from symptom onset, but does not qualify for tPA use, what other therapies might be considered in order to improve outcome?

### ***Stroke Care After the 3 Hour Window for IV tPA use:***

#### ***What Diagnostic and Therapeutic Options?***

What are optimal diagnostic modalities when evaluating acute ischemic stroke patients who do not qualify for IV tPA because the three hour window has been exceeded?

What pharmacologic, interventional radiology, and operative techniques should be considered when managing stroke patients who present late after symptom onset?

### ***Stroke Care Guidelines and Neuroprotection Strategies***

Which guidelines should be utilized in what manner in order to optimize stroke patient care?

What neuroprotection strategies are prevent secondary brain injury following stroke?

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## ***Stroke Care 2006: Clinical Consensus and Opportunities***

# **Stroke in the Prehospital and ED Settings: When Should EMS triage & Inter-hospital Transfer occur?**

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### **Learning Objectives**

- Discuss how and why direct EMS triage to specialized stroke centers should take place.
- Determine under what circumstances the inter-hospital transfer of ischemic stroke patients should take place when specialized stroke care is desired.

### **Background**

In order to optimize the care of stroke patients, primary stroke center certification has been established by the JCAHO. In addition to these resources, there currently exist tertiary centers that provide specialized stroke care, and there are plans to certify comprehensive stroke centers. Given that these resources exist, the question arises whether or not stroke patients should be triaged directly from the prehospital setting to these specialized stroke care institutions. Surrounding this questions are issues such as the ability to identify stroke patients accurately, the potential benefit of the triage, and the financial and systems implications of the triage process. Already some governmental agencies have established that this triage take place, and research has suggested benefit from this practice. What should be the future of the EMS triage of these stroke patients?

When stroke patients are not triaged to specialized stroke centers but are instead treated in hospital EDs that are staffed by emergency physicians, when should stroke patients be transferred to another institution because of the availability of diagnostic and treatment modalities that will improve outcome? This question also should be addressed as more stroke center resources develop.

### **Key Clinical Questions**

When and why should stroke patients in the EMS setting be traiged to specialized stroke centers?

When should interhospital transfer of stroke patients from EDs to specialized stroke centers occur?



## ***Stroke Care 2006: Clinical Consensus and Opportunities***

# **Stroke Patient and New Stroke Therapies Assessment: ED NIHSS Use & Stroke Scales Use in Assessing ED Stroke Therapies**

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### **Learning Objectives**

- Discuss how the NIHSS should be utilized by emergency physicians in assessing ED ischemic stroke patients.
- Determine what emergency physicians need to know about stroke scales when evaluating stroke therapies that could be utilized in the ED.

### **Background**

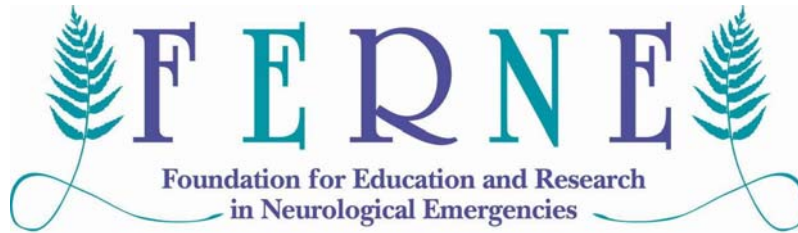
Although the NIHSS is the accepted industry standard for evaluating stroke patients, its use in the ED is variable. Lack of expertise, the time it takes to complete it, and poor understanding of how it impacts decisions such as the use of tPA in treating acute ischemic stroke patients all impact its potential use. Because the NIHSS was utilized to assess tPA use in the NINDS clinical trial, and because stroke neurologists communicate stroke severity using this scale, it is important to fully understand how the use of this scale can be optimized in the ED.

Equally important is having an understanding of how to utilize scales such as the Barthel Index (BI) and Modified Rankin Scale (MRS) when assessing stroke therapies that can be used in the ED. For example, it is possible using data from the NINDS clinical trial of tPA to assess how many patients will have the best clinical outcome for each that might sustain a symptomatic ICH following tPA use. This information is important as ED physicians consider the use of stroke therapies in the managing ED stroke patients.

### **Key Clinical Questions**

What is the role of the NIHSS in the ED evaluation and treatment of ischemic stroke patients?

How can other stroke scales be simply utilized by practitioners in order to assess the clinical effectiveness of ED ischemic stroke therapies?



## ***Stroke Care 2006: Clinical Consensus and Opportunities***

# **Stroke Care within the 3 Hour Window for IV tPA Use: Why tPA? And if Not, What Alternatives?**

**E. Bradshaw Bunney, MD, FACEP**

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### **Learning Objectives**

- Discuss the current use of tPA given the NINDS clinical trial data, the reanalysis of this data, and the presence of phase IV data that confirms its clinical efficacy.
- Determine if there are other therapies that might be utilized during the initial ED evaluation of stroke patients who are within the first three hours but who do not qualify for tPA use.

### **Background**

Despite the presence of clinical trial data and phase IV data that has demonstrated the clinical efficacy and the clinical effectiveness of tPA in treating ischemic stroke patients, the Emergency Medicine community still actively debates the utility of this therapy in the ED. The initial NINDS results were published 11 years ago, demonstrating clinical efficacy. There have been over 12 publications demonstrating comparable results in the clinical setting suggesting clinical effectiveness. The NINDS data was reanalyzed, and in fact demonstrated comparable efficacy even when considering baseline stroke severity. So where does this leave the standard of care in 2006?

Even in institutions where tPA is utilized, there are patients for whom IV tPA use may not apply. What are the options for these early stroke symptom patients? Do they differ from the options that exist for stroke patients who are treated after the IV tPA three hour window? What should EM physicians do when confronted with an ischemic stroke patient who does not qualify for IV tPA despite arriving quickly following symptom onset?

### **Key Clinical Questions**

What is the optimal use of tPA given its reported efficacy and clinical effectiveness?

If a stroke patient is within three hours from symptom onset, but does not qualify for tPA use, what other therapies might be considered in order to improve outcome?



## ***Stroke Care 2006: Clinical Consensus and Opportunities***

### **Stroke Care After the 3 Hour Window for IV tPA use: What Diagnostic and Therapeutic Options?**

**Thomas G. Brott, MD**

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Department of Neurology  
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#### **Learning Objectives**

- Discuss what diagnostic modalities should be used in the diagnosis of acute ischemic stroke who are treated greater than three hours after symptom onset.
- Determine the role of pharmacologic, interventional radiology, and operative techniques, in the management of ischemic stroke patients after the three hour tPA window.

#### **Background**

There have been numerous advances in the acute diagnosis of patients with acute ischemic stroke. The availability of CTA, MRI, MRA, as well as traditional cerebral angiography may allow the diagnosis for stroke to be made more accurately, and also may allow for therapeutic modalities to be used more effectively and efficiently. How have these new modalities changed the way in which we diagnose or should diagnose acute stroke patients in the ED, especially those who are being treated after the three hour IV tPA window?

Additionally, devices such as the mechanical clot removal device have been FDA approved and provide a unique and promising therapeutic modality for the treatment of acute ischemic stroke patients. However, how and when patients should be directed to this therapy, other mechanical therapies, pharmacologic interventions, or operative intervention remains uncertain. What should Emergency Medicine physicians know about these therapies so that they can appropriately obtain consultation and plan disposition for the ED ischemic stroke patients that they treat?

#### **Key Clinical Questions**

What are optimal diagnostic modalities when evaluating acute ischemic stroke patients who do not qualify for IV tPA because the three hour window has been exceeded?

What pharmacologic, interventional radiology, and operative techniques should be considered when managing stroke patients who present late after symptom onset?



## ***Stroke Care 2006: Clinical Consensus and Opportunities***

# **Stroke Care Guidelines and Neuroprotection Strategies**

**Edward P. Sloan, MD, MPH, FACEP**

**Professor  
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### **Learning Objectives**

- Discuss how published clinical guidelines can be utilized in order to improve the care of stroke patients through optimized local policies and procedures.
- Review the current state of neuroprotection strategies that limit the extent of secondary injury following acute ischemic stroke.

### **Background**

Despite the fact that many clinical guidelines have been published that describe how patient care can be optimized in the acute setting, there still exists variability in the awareness of these clinical guidelines and their utilization in local hospital policies and procedures. As such, it is important to know what guidelines exist, what information is contained in them, and how this information can be used to assist the emergency physician in medical decision making. In reviewing these guidelines, it should be possible for emergency physicians to standardize their stroke patient care both within and across institutions.

Efforts to maximize neuroprotection in the care of patients with CNS illness and injury have yielded variable results. Although some stroke patient clinical guidelines address how secondary injury can be prevented, the development of direct neuroprotectants has remained elusive. This session will discuss how secondary brain injury can be avoided through the use of strategies such as glucose and blood pressure control, as well as airway and ICP management. Also to be discussed will be the development status of direct neuroprotectants that may be of value in the acute setting.

### **Key Clinical Questions**

Which guidelines should be utilized in what manner in order to optimize stroke patient care?

What neuroprotection strategies are useful in preventing secondary brain injury following stroke?