



# Emergency Medical Services Stroke Policy Inventory

Executive Summary Report  
2008

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## Key Findings

- While all states had Primary Stroke Centers, none of the states saw changes in the states' development of patient care, treatment and triage protocols for potential stroke. Any changes were noted in urban areas.
- Four states have a state legislated trauma system (Illinois, Minnesota, Ohio and Wisconsin) and two states are in process (Michigan and Indiana).
- Data collection varies widely. Three states are using electronic data collection state-wide (Minnesota, Wisconsin, and Ohio). Two states (Illinois and Indiana) are collecting data electronically but not all systems comply with electronic data collection.
- Three states felt standardization of protocols is something that is recognized that would most significantly impact expedient stroke care to a potential stroke patient.
- No states had stroke telemedicine between hospital and pre-hospital services.

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## Introduction

Established in 2004 through funding from the Centers for Disease Control and Prevention, the Great Lakes Regional Stroke Network (“The Network”) grew out of more than 25 years of collaboration between public health professionals in Illinois, Indiana, Michigan, Minnesota, Ohio and Wisconsin. The Network aims to optimize collaboration and coordination among the Great Lakes Regional States to reduce the burden of stroke and disparities. A key component of successful health initiatives is collaboration and successful partnerships. The Great Lakes Regional Stroke Network strives to be a resource in the region about stroke related policies and initiatives as well as carrying out its mission to optimize collaboration and coordination among the Great Lakes Regional States to reduce the burden of stroke and disparities.

In order to affect systems level changes for reducing the burden of stroke in the Great Lakes Region, it is necessary to understand the current capacity and system for stroke care in the Great Lakes states. The American Stroke Association’s Task Force on the Development of Stroke Systems recognized, “... a fragmented approach to stroke care that exists in most regions of the United States...” and recommends a stroke system that includes: Primordial and primary prevention, community education, notification and response of emergency medical services (EMS), acute stroke treatment, subacute stroke treatment and secondary prevention, rehabilitation and continuous quality improvement activities.<sup>1</sup> In 2006, the American Stroke Association convened a multi-disciplinary expert panel on Emergency Medical Services to review in detail the 2004 Task Force’s recommendations involving emergency medical services. This expert panel then released a policy statement in 2007.<sup>2</sup>

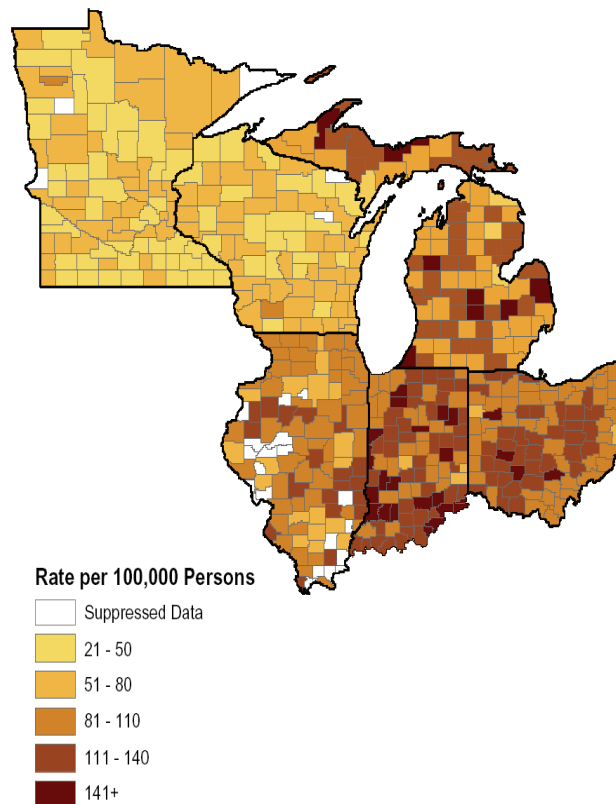
The purpose of this report is to focus on the emergency medical services policies in the Great Lakes region in relation to stroke. Several states in the Great Lakes region have already conducted a state wide assessment of EMS services, however, this will be the first approach of a regional focus. The Great Lakes Regional Stroke Network convened an EMS Notification and Response work group to inventory Emergency Medical Services, stroke capacity, and policies in the region. This assessment was intended primarily to be the first phase of a larger project to strengthen EMS notification and response.

The effective integration of EMS for stroke involves complex interactions among the public, 9-1-1 call center personnel, EMS providers, emergency department providers and stroke care specialists.<sup>2</sup> Pre-hospital recognition of the potential stroke patient is essential for rapid initiation of treatment. Decisions made by EMS personnel can affect treatment and contribute to the immediate, short-term and long-term outcomes of the acute stroke patient making Emergency Medi

cal Services a vital partner when discussing stroke related issues.<sup>3</sup>

The tremendous burden of stroke has not escaped the states in the Great Lakes Region. Stroke is the third leading cause of death in the Great Lakes region after heart disease and cancer. Stroke deaths accounted for over 25,000 deaths or 5.7% of all deaths that occurred in the total population in the Great Lakes region in 2002. Over 25,000 deaths or 5.5% of all deaths that occurred in the total population in the Great Lakes region in 2002 were due to stroke. Five of the six states in the region have a higher rate of stroke than the US age adjusted rate of 56.2 per 100,000 far exceeding the goal of Healthy People 2010. Financial costs are high as well for stroke, with \$2.3 billion in total hospital charges in the region. As one of the leading causes of death and disability, stroke clearly remains a top public health priority.<sup>4</sup>

Age-adjusted Stroke Mortality by County, for Adults 35 Years and Older, Great Lake States, 2000-2004.<sup>1,2,3</sup>



<sup>1</sup>Stroke defined as ICD-10 codes I60-I69.  
<sup>2</sup>Rates adjusted to the US 2000 standard population.  
<sup>3</sup>Rates for counties with less than 20 deaths in the five year time period were suppressed.

In 2007, the Great Lakes Regional Stroke Network sought to further define the burden of stroke in the Great Lakes region by creating a map of the region with county level data of stroke mortality. Findings include:

- Illinois, Indiana, Michigan and Ohio have higher stroke mortality rates than Minnesota and Wisconsin.
- Pattern of higher stroke mortality appears in Southeastern Illinois, across Indiana, and in Southwest Ohio as well as across the Upper Peninsula of Michigan compared to the whole region.
- Indication of fewer Primary Stroke Centers in higher mortality area (belt) in Great Lakes region.<sup>5</sup>

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## **Methods**

Each state in the Great Lakes Regional Stroke Network was encouraged to have their state EMS Director or where they existed, their EMS Medical Director, attend a conference call in order to begin discussing EMS policies as they relate to stroke for their respective states. Heart Disease and Stroke Prevention Program Staff were also invited to attend. The inaugural meeting was led by Dr. Carol Cunningham, EMS Medical Director for the State of Ohio and was held in June, 2006. A list of questions was sent to attendees prior to the call in order to prepare for discussion. A list of attendees can be found in Appendix B. A second follow up call was held in September 2007 to address additional questions relating to EMS stroke policy. Please note that the responses contained within this inventory are the reflection of those who participated on the call. It may not be the same view held by local EMS providers “in the trenches.”

## **Results**

All 6 states in the Great Lakes Regional Stroke Network had representation. The entire list of questions can be found in Attachment A. Graphic depictions of the results can also be found on the next several pages along with discussion.

**Do your EMS providers use local, regional or statewide patient care protocols for stroke?**

	State					
	IL	IN	MI	MN	OH	WI
Local Protocol		x		x	x	
Regional Protocol	x					
State Stroke Protocol			x			x

**Discussion:** An EMS protocol or standing order is defined as a guideline for pre-hospital patient care. Local and regional protocol development is a collaborative process involving numerous stakeholders such as provider agencies, the Medical Director, the EMS Medical Advisory Board and the County's Regional Trauma Center if one exists. The National Association of EMS Physicians' resource recommends that EMS Medical directors should, "develop protocols that address a multitude of issues related to the care of stroke patients...appropriate identification and treatment...integration of the EMS system into regional stroke systems."<sup>3</sup> Michigan provides state EMS protocols for stroke to be used at a minimum and local Medical Control authorities could write an additional protocol using the state protocol as a minimum. However, many local EMS medical directors have adopted the state EMS guidelines as their local EMS protocol. Michigan's State EMS Stroke Protocol can be found in Appendix C.

Other states have developed a local or regional protocol for treating stroke. In Illinois, Indiana, Minnesota, Ohio and Wisconsin protocols are usually left up to the discretion of the EMS Medical Director for the County, usually an Emergency Medicine physician. In Michigan, the Medical Control Authority is responsible for protocol development in their geographical region. Therefore, the type of pre-hospital stroke protocol that may or may not be utilized depends on the county where a stroke occurs. A sample of an local EMS Stroke Protocol can be found in Appendix E.

Home rule is an important component for some states in the Great Lakes region pertaining to Emergency Medical Services. For example, in Ohio, the constitution authorizes cities and villages to govern themselves in local matters independent of state laws. Therefore, cities and villages can create their own policies and standard operating procedures, exempt from state policies and procedures.

In the Great Lakes region, Minnesota agencies report that over 78% have some sort of written protocol or standard operating procedure for the management of a suspected stroke patient <sup>7</sup> In Illinois, over 89% report their EMS System has a protocol or standing Medical Order for the management of a suspected stroke. <sup>8</sup> A survey recently conducted of Indiana EMS found that 92% have a written protocol or standing operating procedure specific to stroke. <sup>9</sup>

**Does EMS use a stroke scale in field? Is it a part of their protocol?**

	State					
	IL	IN	MI	MN	OH	WI
Yes		x	x	x	x	
No						
Varies	x					x

**Discussion:** For EMS to begin to identify a person as having a stroke, a screening tool that is easy to perform is invaluable. <sup>3</sup> In order to assure that EMS providers can identify acute stroke patients rapidly and accurately, the American Stroke Association’s EMS Expert Panel recommends the use of a validating screening algorithm. <sup>1</sup> This allows for appropriate treatment in the field, rapid transport, determination of the most effective hospital and pre-arrival notification to the receiving hospital en route. <sup>2</sup> Two scales in particular, the Cincinnati Pre-hospital Stroke Scale and the Los Angeles Pre-hospital Stroke screen, enable EMS responders to identify stroke patients with a high degree of reliability. <sup>10-17</sup>

A survey recently conducted of Indiana EMS found that 85% of the responding agencies are using the Cincinnati Pre-hospital Stroke Scale. <sup>9</sup> Michigan also reports the use of the Cincinnati Pre-hospital Scale as per their state protocol. In a Minnesota EMS survey, 42% use the Cincinnati Stroke Scale or a modified version. <sup>7</sup> In Wisconsin, the majority of the services use the Cincinnati stroke scale although some physician medical directors actually use a hybrid of several. As a state they do not mandate a specific protocol or stroke scale measurement tool but most local protocols do identify and use the Cincinnati scale.

**Have any hospitals within your state become designated primary stroke centers?**

	State					
	IL	IN	MI	MN	OH	WI
Joint Commission Primary Stroke Centers	21	9	21	9	23	17*

**Discussion:** All states in the Great Lakes Regional Stroke Network have certified Primary Stroke Centers (PSC) although based on the most recent Joint Commission listing at the time of this publication, the majority of these Primary Stroke Centers are clustered in metropolitan areas of each state. In 2005, The Joint Commission (formerly JCAHO) began to certify Primary Stroke Centers recognizing centers that make exceptional efforts to foster better outcomes for stroke care. Achievement of certification signifies that the services provided have the critical elements to achieve long-term success in improving outcomes. The Joint Commission's Primary Stroke Center Certification program was developed in collaboration with the American Stroke Association and is based on the Brain Attack Coalition's "Recommendations for the Establishment of Primary Stroke Centers."<sup>16</sup> In 2006, Healthcare Facilities Accreditation Program (HFAP) also began to certify Primary Stroke Centers.<sup>17</sup> The American Stroke Association's Expert EMS Panel calls for patients being transported to the nearest stroke center for evaluation and care if a stroke center is located within a reasonable transport distance and transport time.<sup>2</sup>

\* As of March 2008

**Do you have Critical Access Hospitals in your state?**

	State					
	IL	IN	MI	MN	OH	WI
Critical Access Hospitals	51	54	33	77	31	54

**Discussion:** All states in the Great Lakes Regional Stroke Network have Critical Access Hospitals (CAH). A Critical Access Hospital is a hospital that is certified to receive cost-based reimbursement from Medicare. The reimbursement that CAHs receive is intended to improve their financial performance and thereby reduce hospital closures. Critical Access Hospitals must be located in a rural area and meet one of the following criteria:

- Over 35 mile distance from another hospital, or
- 15 miles from another hospital in mountainous terrain or areas with only secondary roads or
- State-certified as a necessary provider of health care services to residents in the area<sup>18</sup>

CAHs may have a maximum of 25 beds. There are 300 Critical Access Hospitals in the Great

Lakes Region.<sup>18</sup>

**Has the development of Primary Stroke Centers had an impact your state’s development of patient care treatment and triage protocols for potential strokes?**

	State					
	IL	IN	MI	MN	OH	WI
Unsure				x		
Only in Urban Areas		x			x	
No	x		x			x

**Discussion:** The basis for Joint Commission and HFAP’s Primary Stroke Center Certification are the Recommendations for the Establishment of Primary Stroke Centers established by the Brain Attack Coalition.<sup>19,20</sup> As mentioned earlier, the majority of certified Primary Stroke Centers are clustered in metropolitan areas in the Great Lakes region. In several cases, state administered programs are also certifying Primary Stroke Centers, such as Florida, New York, Massachusetts, Maryland, and New Jersey. At this time, no states in the Great Lakes region have state administered stroke center certification programs.

**Does your state have a legislated trauma system?**

	State					
	IL	IN	MI	MN	OH	WI
In Process		x	x			
Yes	x			x	x	x
No						

**Discussion:** Trauma systems were designed to provide timely and appropriate treatment to the most seriously injured.<sup>21</sup> This was based on the idea that “patient outcomes would improve by instituting standards to ensure timely transfer of seriously injured patients to facilities certified to contain the appropriate services, expertise and resources needed to treat a patient’s specific ailments.”<sup>22-23</sup> Many components comprise a statewide trauma care system. Detailed planning is required for all components to interface successfully and for health professionals to interact properly, enabling the trauma system to work effectively. Emergency care providers match patients with the aid of triage protocols and medical supervision to the correct medical facility equipped with the right resources to best meet the patient’s needs. This approach may mean bypassing the closest medical facility.<sup>24</sup> All states in the Great Lakes Region have a trauma system or are in process of establishing one.

**Are EMS providers permitted to dispatch aero-medical support for suspected stroke patients directly or do they require permission to do so from medical control?**

	State					
	IL	IN	MI	MN	OH	WI
Local Protocol	x				x	
Varies		x	x			x
Unsure				x		

**Discussion:** Studies show that field-to-helicopter transport programs for acute ischemic stroke is a feasible way to extend stroke expertise to communities that lack the necessary resources.<sup>25-</sup>  
<sup>27</sup> Data suggest that aero-medical transfer of stroke patients may increase the opportunity for acute intervention and can be accomplished safely.<sup>26,28-30</sup> The Air Medical Physician Association’s Position Paper on the “Appropriateness of Medical Transport and Access to Care in Acute Stroke Syndromes” recognizes that acute stroke syndromes are common reasons that air and ground medical transport are utilized and supports the standardization of state and regional stroke transport destination protocols and access to care policies.<sup>31</sup> As stated by the ASA expert panel, “Air transport...may be especially appropriate for the transport of patients in rural areas who otherwise would be unable to access acute therapies for stroke.”<sup>2</sup>

A recent survey conducted of EMS in Indiana found that 67% respondents reported that they never use a helicopter for transporting a suspected stroke patient.<sup>9</sup> Minnesota similarly found that helicopter transport is used infrequently with 70% of respondents reporting infrequently or never using helicopter transport.<sup>7</sup>

**Does your state collect EMS Data?**

	State					
	IL	IN	MI	MN	OH	WI
Local Data Collection Only			x			
Partial Data Collected Electronically	x	x				x Since 4/06
All data electronically collected				x	x	x Started 1/08

**Discussion:** There is not a national mandate that State Offices of EMS collect the same data or a mandate of how that data are to be collected. Recognizing this need, the National EMS Infor-

mation Systems (NEMSIS) was created to develop a uniform dataset and ensure the portability of the data. The National elements are transmitted to the NEMSIS Technical Assistance Center (TAC) to populate the national EMS dataset. The state selects elements from the National Highway Safety Administration (NHTSA) 2.2.1 data dictionary according to their needs, keeping the national elements as part of their selection. Local providers may select additional elements according to their needs, keeping the national elements and the state elements as part of their selection. All states in the Great Lakes Region except Illinois report that their EMS data dictionaries are 100% compliant with the NHTSA 2.2.1 data dictionary.<sup>32,33</sup>

All states in the Great Lakes Regional Stroke Network have signed a memorandum of understanding (MOU) with NEMSIS. Minnesota is already electronically sending data to NEMSIS and Wisconsin and Indiana report they will be capable of submitting in 2007.<sup>34</sup> Illinois and Ohio report that they are unsure when they could start to submit data to NEMSIS. In Michigan, plans are currently being processed on how to transmit this data.

Stroke data elements are not a part of the NEMSIS minimum data set but can be added at the state or local level. A policy statement from the American Stroke Association’s Expert Panel on Emergency Medical Services Systems and the Stroke Council encouraged working with NEMSIS including the collection and submission of stroke data elements for inclusion in the national EMS dataset as well as working with state EMS offices to ensure that stroke is added in state datasets and to use this data for continuous quality improvement activities.<sup>2</sup> Already, Illinois HDSP Program has made recommendations to their Office of EMS on recommended stroke related measures for collection from the NHTSA Data Dictionary.

**Are dispatchers required to be certified?**

	State					
	IL	IN	MI	MN	OH	WI
Yes	x					
No			x	x	x	x
In process		x				

**Discussion:** The recent policy statement from the American Stroke Association’s Expert Panel on Emergency Medical Services Systems and the Stroke Council recommended that all EMS communicators receive written and in person education on the recognition of stroke signs and symptoms. EMS Communicators play a critical role in the stroke system of care. Not only do they dispatch the most appropriate EMS response, but they also provide pre-arrival information

to stroke patients and their families as well as begin the process of collecting vital pre hospital information that is necessary for determining the most appropriate transfer facility.<sup>2</sup>

While dispatchers are required to be certified in Illinois, there is no enforcement. The Illinois EMS Act requires 911 dispatchers to complete training in emergency medical dispatch and become certified.<sup>35</sup> For Indiana, there is new legislation (2006) is in place for dispatchers to be certified.<sup>36</sup> A recent survey conducted in Indiana found that 86% of respondents reported that dispatch personnel have EMD training. Michigan, Minnesota, Ohio, and Wisconsin do not require dispatchers to be certified although some may do it voluntarily.

**Does Dispatch use computerized protocols?**

	State					
	IL	IN	MI	MN	OH	WI
Yes				x		
No					x	
Varies	x	x	x			x

**Discussion:** Recommendations include the promotion of nationally recognized emergency medical dispatch guidelines reflecting current ASA/AHA guidelines, advocating for funding for local 911 call centers to receive training to acquire an EMD caller interrogation tool to help EMS communicators more effectively identify stroke and work with leading commercial providers of EMS protocol interrogation tools to ensure that their products meet ASA/AHA standards and guidelines.<sup>2</sup>

There is no statewide or region wide consistency on this issue in the Great Lakes region. Some providers use computerized protocols while others use paper/flip chart protocols.

**Willing to transport witnesses or next of kin in rig to hospital for more complete history or collecting cell phone numbers for ED personnel to call and collect needed data?**

	State					
	IL	IN	MI	MN	OH	WI
Yes						
No						
Varies	x	x	x	x	x	x

**Discussion:** EMS responders and communicators play an important role in collecting information about the time of the onset of stroke symptoms or the last time seen “normal.” This data can be essential to clinical decision making in the acute treatment of stroke.<sup>1</sup> It is therefore necessary to either provide rides to the next of kin that can answer these questions in the ambulance or to collect necessary phone numbers for ED personnel to call and collect this needed data. Yet some ambulance policies do not allow rides to be given to next of kin. In the Great Lakes region, this policy varies from each EMS agency due to legal issues and/or internal policies.

**Does EMS communicate with ED about impending stroke arrival? Do they follow-up with the hospital about disposition of patient/outcome?**

	State					
	IL	IN	MI	MN	OH	WI
Varies	x	x	x	x	x	x
Yes						
No						

**Discussion:** Collaboration between EMS responders and hospital providers can help minimize the time required for stroke patients to receive care. One way that this can happen is by having EMS responders notify the hospital of a potential incoming stroke patient.<sup>2</sup> This increases the likelihood that hospitals will quickly receive and treat the stroke patient.<sup>2, 37</sup> It is a recommended measurement parameter that pre-arrival notification of hospitals is provided for all suspected stroke patients by the ASA Expert Panel on EMS. Additionally, providing ongoing feedback to EMS providers who care for and transport stroke patients is also recognized.<sup>2</sup> A survey recently conducted in Indiana found that 53% of respondents notify the destination hospital with the information that they are treating/transporting a possible acute stroke. However, 57% do not have a written protocol or policy to determine where acute stroke patients are transported.<sup>9</sup> In a survey conducted in Minnesota, it is a policy for the majority (N = 155, 79%) of respondents to provide advance notice to hospitals regarding stroke patients who need urgent care. Data has not been collected on the communication between emergency departments and EMS providers regarding feedback on stroke patients.<sup>7</sup>



Stroke Alert Day, Mock Stroke Code Illinois

## Is there a stroke team ready to accept patient when EMS arrives?

	State					
	IL	IN	MI	MN	OH	WI
Varies	x	x	x	x	x	x
Yes						
No						

**Discussion:** The importance of stroke teams has been long established. According to the ASA Policy Recommendations, “Acute stroke teams help to coordinate stroke care from the moment the patient arrives at the ED or after notification from pre-hospital personnel.”<sup>1</sup> The Brain Attack Coalition in their recommendations for the Establishment of Primary Stroke Centers lists acute stroke teams as a major element of a primary stroke center. The Joint Commission in their Primary Stroke Center Certification program also lists stroke teams as a part of there stroke standardized measure set framework.<sup>38</sup>

All of the states responded that it varies depending on the hospital where the patient is taken. A recent survey conducted in Minnesota found that 7% of respondents reported that in their opinion a specialized stroke team were ready and waiting for patient to arrive.<sup>7</sup> Eighteen percent of respondents to an Indiana EMS Survey said that a specialized stroke team is waiting and ready to care for the patient on arrival.<sup>9</sup>

## Composition of Emergency Medical Services

	State					
	IL	IN	MI	MN	OH	WI
Volunteer	x	x	x	x	x	x
Basic Life Support (BLS)	x	x	x	x	x	x
Advanced Life Support (ALS)	x	x	x	x	x	x
Private	x	x	x	x	x	x

**Discussion:** All states in the Great Lakes region have volunteer Emergency Medical Services, Basic Life Support and Advanced Life Support Services and Private EMS. This is an area that states are further researching and defining. This information could make an entire separate document detailing these EMS services.

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## Discussion and Recommendations

EMS varies widely from state to state in the Great Lakes Regional Stroke Network. For example, not all counties in every state have require dispatchers to be certified, not all states have statewide EMS protocols or utilize a pre-hospital stroke scale. The location of the State Office of EMS also varies: in some states this division is housed in Public Safety, in other states the State Office of EMS is housed at the State Health Department. There is a wide variety of available resources and staff in each state as well. Similarities exist as well. All states have some Joint Commission Primary Stroke Centers and Critical Access Hospitals as well as a trauma system (or are in the process of one).

This inventory identified several areas where improvements in pre-hospital stroke care capacity should be addressed. The following are recommendations for areas which ambulance organizations individually – or a statewide/regionwide collaboration of stakeholders – may consider making systems-level changes to improve pre-hospital stroke care in the Great Lakes Region.

- Strokes should continue to be treated as emergent events by pre-hospital emergency medical service personnel in the Great Lakes region.
- All states should have a pre-hospital stroke protocol that includes the Cincinnati Stroke Scale, a pre-hospital screening tool of suspected stroke victims for their potential candidacy from thrombolytic intervention, and avenues to insure rapid patient assessment, triage, and transport of patients who potentially meet criteria for thrombolytic intervention to the appropriate facility.
- Training for pre-hospital EMS providers and dispatchers on stroke issues should be provided on an annual or semi-annual basis.
- A process is in place to provide EMS with patient disposition information. This information will be used to inform EMS Quality improvement activities and enhance communication.
- State EMS agencies should add stroke indicators to electronic data systems.
- Joint training between EMS providers and emergency department personnel would be ideal and enhance coordination of acute stroke treatment.

1. Statewide Protocol — Does your EMS providers use local, regional, or statewide patient care protocols for stroke?
2. Do your EMS providers use local, regional, or statewide triage protocols?
3. Have any of the hospitals within your state become designated stroke centers?
4. If so, has this impacted your state's development of patient care treatment & triage protocols for potential strokes?
5. Does your state have a legislated trauma system?
6. If not, have any hospital systems or regional health care systems developed their own triage system for potential strokes & does it include pre-hospital?
7. Are most EMS providers permitted to dispatch aero medical support directly or do they require permission to do so from medical control?
8. The time for the potential stroke victim to enter the health care system by calling 911 and activating EMS remains a huge obstacle for patients to be eligible for thrombolytics during an ischemic CVA. What has your state done to enhance public education on this topic? What programs or additional programs would you like to see instituted?
9. Are any states moving towards a transfer protocol?
10. Does your state have rural critical access hospitals and do you have regular communication with them?
11. How does your state collect EMS data?
12. Have you notice a variance in the pre-hospital treatment, triage, and transport protocols for potential stroke victims in the metropolitan areas versus the rural areas of your state?
13. Do you feel that a variance in these protocols may be beneficial to the patients in the more remote areas of your state?
14. Has you state examined the effect of treatment, triage, & transport of potential stroke victims upon survival, discharge disposition (nursing home, rehabilitation centers, home, etc.), & long-term functional state (returned to work, handicapped, completely disabled)?
15. Without the political challenges that we all face in state, local, & regional government & in competition between hospitals, what key elements would you include in a prehospital treatment, triage & transport protocol that you feel would most significantly impact expedient stroke care to a potential stroke victim?
16. Telemedicine

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## State Representatives

## Appendix B

Illinois — Terry Hitt, NREMT-P, Region IV Illinois EMS and Brain Churchill, NREMT-P, Springfield.

Indiana — Bob Atkins, NREMT-P, Indiana Stroke Task Force and Bedford Regional Medical Center

Michigan — Robin Shively and Eileen Worden, RN, Michigan Department of Community Health

Minnesota — Mary Hedges, Minnesota Emergency Medical Services Regulatory Board and Stanton Shanedling, PhD, MPH, Minnesota Department of Health

Ohio — Carol Cunningham, MD, State Medical Director, Ohio Department of Public Safety, Division of EMS and Barbara Pryor, RD, LD, MS, Ohio Department of Health

Wisconsin — Brian Litza, MBA, NREMT-P, CCEMT-P, Wisconsin Department of Health and Family Services



STATE MODEL PROTOCOL

CEREBROVASCULAR ACCIDENT (CVA, STROKE) Date: August, 2001  
PROTOCOL Page: 1 of 1

I. Assessment

M B S P

- A. Try to elicit the following signs (abnormality in any one is strongly suggestive of stroke) utilizing the Cincinnati Prehospital Stroke Scale:
  - 1. Facial droop (have patient show teeth or smile)
    - a. Normal: both sides of face move equally well
    - b. Abnormal: one side of face does not move as well as the other side
  - 2. Arm drift (have patient close eyes and hold both arms straight out for 10 seconds)
    - a. Normal: both arms move the same or both arms do not move at all
    - b. Abnormal: one arm does not move or one arm drifts down
  - 3. Abnormal speech (have the patient say "you can't teach an old dog new tricks")
    - a. Normal: patient uses correct words with no slurring
    - b. Abnormal: patient slurs words, uses the wrong words, or is unable to speak
- B. Measure blood glucose

II. Management

M B S P

S  
P

- A. ABC's with Supplemental Oxygen
- B. Minimize scene time, begin transport ASAP (Perform IV start and EKG after going enroute)
- C. Make contact with destination hospital ASAP
- D. IV NS KVO
- F. Monitor EKG.
- G. **IF blood glucose <70 mg/dl treat per Acute Altered Mental Status Protocol**

CONTACT MEDICAL CONTROL

Thank you to Michigan for providing this sample of a Statewide EMS Protocol for Stroke.

Bedford Regional Medical Center

**Emergency Medical Services  
STROKE**

**See also:**

**ALTERED MENTAL STATUS (GOLD 2)**

**DIABETIC EMERGENCIES (GOLD 3)**

**SEIZURES (GOLD 9)**

**EMT BASIC**

Routine Patient Care.

Open airway. Consider airway adjunct.

Spinal immobilization, if injury suspected.

O<sub>2</sub>, as indicated. If inadequate ventilations, assist with BVM. Combitube, if indicated. Suction, as necessary.

Request ALS.

Pulse oximeter.

**ADVANCED EMT**

Cardiac monitor/IV, if indicated

Evaluate patient using the Cincinnati Stroke Scale and notify hospital with results as soon as possible if positive for stroke. Document all findings on trip report..

**EMT INTERMEDIATE**

If blood glucose <60, see **DIABETIC EMERGENCIES (GOLD 3)** protocol.

Advanced airway, if indicated.

**PARAMEDIC**

Consider obtaining 12-lead EKG

**THE CINCINNATI STROKE SCALE**

**FACIAL DROOP** (*Patient shows teeth or smiles*)

Normal: Both sides of face move equally

Abnormal: One side of face does not move as well as the other

**ARM DRIFT** (*Patient closes eyes and extend both arms straight out for 10 seconds.*)

Normal: There is no drift at all or both arms drift the same

Abnormal: One arm drifts/moves down compared to the other arm or one arm noticeably weaker than the other.

**SPEECH** (*Score first attempt: Patient repeats, e.g. "You can't teach an old dog new tricks."*)

Normal: The Patient says the correct words with no slurring of words on first attempt.

Abnormal: The patient slurs words, says the wrong words or is unable to speak on first attempt.

**CINCINNATI  
PREHOSPITAL  
STROKE SCALE**

**Facial Droop**

Normal: Both sides of face move equally

Abnormal: One side of face does not move at all

**Arm Drift**

Normal: Both arms move equally or not at all

Abnormal: One arm drifts compared to the other

**Speech**

Normal: Patient uses correct words with no slurring

Abnormal: Slurred or inappropriate words or mute

- 1 Schwamm LH, et al. 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 (8): 1078-91.
- 2 Acker JE 3rd, Pancioli AM, Crocco TJ, Eckstein MK, Jauch EC, Larrabee H, Meltzer NM, Mergendahl WC, Munn JW, Prentiss SM, Sand C, Saver JL, Eigel B, Gilpin BR, Schoeberl M, Solis P, Bailey JR, Horton KB, Stranne SK, American Heart Association, American Stroke Association Expert Panel on Emergency Medical Services Systems. Implementation strategies for emergency medical services within stroke systems of care: a policy statement from the American Heart Association/American Stroke Association Expert Panel on Emergency Medical Services Systems and the Stroke Council. *Stroke* 2007 Nov;38(11):3097-115.
- 3 Millin MG, Gullett T, Daya M. EMS Management of acute stroke—out of hospital treatment and stroke system development. *Prehospital Emergency Care* 2007; 11:318-325.
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