



Indiana State  
Department of Health  
Chronic Disease/CVH & Diabetes

## Indiana Stroke Prevention Task Force's

Guide to the Indiana  
Stroke Guidelines

## Introduction

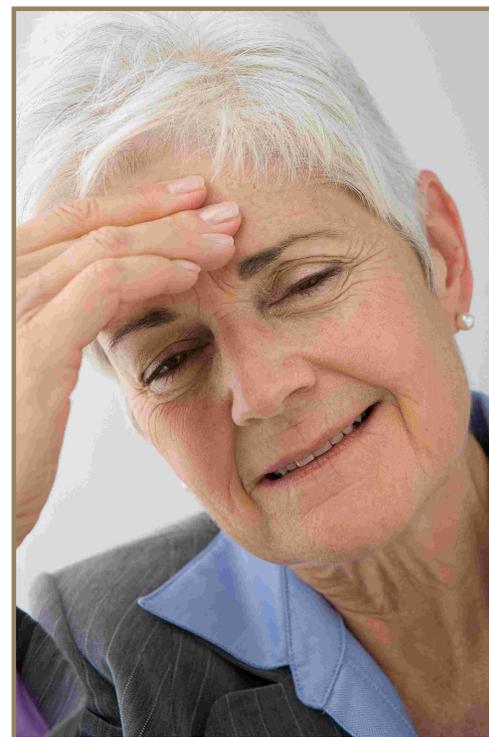
*Stroke has a major impact on the lives of Hoosiers, as well as the state's economy. It is the fourth leading cause of death, and the leading cause of disability in our state. Indiana had the 7<sup>th</sup> highest stroke rate in the country and ranked 15<sup>th</sup> in mortality from stroke as of 2007. Ten people die from stroke every day in Indiana. Currently, more than 2 percent of the population in Indiana is living with the sequelae of stroke. The cost for medical care for the patients discharged in Indiana with a diagnosis of stroke in 2003 was \$300 million. The indirect costs related to lost productivity of these patients in the Indiana economy was much more.*

*The Indiana Stroke Prevention Task Force was created by legislation passed in 2004. This was done in an attempt to reduce the burden of stroke in Indiana. One specific effort involved the creation of the Indiana Stroke Guidelines. These guidelines were developed from the currently available published information and experience including guidelines and recommendations from other specifically interested organizations (e.g., American Stroke Association, National Stroke Association, and others). The purpose of our guidelines is to provide a basis and a minimum standard from which the management of stroke may proceed.*

*In the publication, we attempt to provide a brief summary of some of the more salient points from the more detailed guidelines. We also try to provide some direction in terms of using the guidelines to facilitate your management of stroke patients. The complete guidelines may be found at: [http://www.in.gov/isdh/files/Indiana\\_Stroke\\_Guidelines.pdf](http://www.in.gov/isdh/files/Indiana_Stroke_Guidelines.pdf)*

## Signs and Symptoms

- 1. Weakness on one side**
- 2. Numbness on one side**
- 3. Trouble talking**
  - Slurred speech
  - Trouble finding words
- 4. Trouble Walking**
- 5. Dizziness**
- 6. Visual changes**
  - Double vision
  - Partial loss of vision
- 7. Confusion**
- 8. Headache**



## Risk Factors

### 1. Unmodifiable

- Age
- Gender
- Ethnicity
- Heredity
- Low birth weight

### 2. Modifiable

- Carotid artery stenosis
- Hypertension
- Coronary artery disease
- Atrial fibrillation
- Tobacco use
- Sickle cell disease
- Transient ischemic attack/prior stroke
- Elevated lipids
- Diabetes mellitus
- Hyperhomocysteinemia

### 3. Less well documented

- Other cardiac disease
- Obesity
- Physical inactivity
- Oral contraceptives/hormone replacement therapy
- Alcohol/illicit drugs
- Hypercoagulability/inflammation
- Sleep apnea

The Guidelines address each of these risk factors individually. There is a section discussing the background of the risk factors in terms of the nature of the risk for stroke and the currently available treatments. Recommendations are suggested for the diagnosis of the risk factors and their subsequent management with regard to evidence-based reports. This information may be found in the section: "Recognition and Intervention of Risk Factors for Stroke" (pg. 1-12). A bibliography of the relevant literature is included for more detailed information.

## Transient Ischemic Attack (TIA)

**1. Transient (Short term/come and go) neurological deficit lasting less than 1 hour**

**2. 10% of patients will have a stroke in the first month if not treated**

### 3. Evaluation

- Neurologic exam
- MRI brain
- Look for source: carotids, heart, coagulation, other risk factors

### 4. Treatment

- Treat risk factors
- Antiplatelet medication
- Carotid intervention (e.g. surgery or stenting)
- Anticoagulation

**5. This needs to be managed as an emergency**

### 6. Educate patients regarding

- Risk of stroke
- Symptom recognition
- Need for emergent evaluation with symptoms

The Guidelines present background on Transient Ischemic Attack (TIA) including the definition, symptoms, risk factors, and causes. There is information regarding the diagnosis of TIA and its causes, as well as, the treatment to reduce the risk of further events. Recommendations are then made for recognition, evaluation, and management of the patient experiencing a TIA. All of this information is included in the section "Diagnosis and Treatment of Transient Ischemic Attack" (pg. 13-23). A bibliography of relevant literature is also provided.

## Stroke: Emergency Care

- 1. Stroke is an emergency**
- 2. EMS dispatcher needs to be suspicious of stroke**
  - Falling
  - Weakness
  - Confusion
- 3. EMS on scene**
  - Exam: Cincinnati stroke scale
  - History: time of onset
  - Communication to ER
- 4. Emergency room**
  - History
  - Examination
  - CT brain
  - Neurology consult
- 5. Treatment**
  - Consider tPA, if patient meets criteria
  - Transfer to stroke center as appropriate
  - Admit to ICU if tPA (tissue plasminogen activator)

The Guidelines include the background regarding symptoms, differential diagnosis, pertinent historical data, directed physical examination, ancillary testing, and acute treatment (pg. 24-28). This information is based on evidence from clinical studies. There are more detailed recommendations in the full Guidelines (pg. 34-37). The bibliography includes relevant references.



5

## Stroke: in Hospital

- 1. Management**
  - Neurologic assessments
  - Cautious blood pressure control
  - Monitor glucose
  - Monitor cardiac rhythm
  - Maintain oxygen
- 2. Minimize complications**
- 3. Identify and treat etiology**
- 4. Identify and treat risk factors**
- 5. Educate patient and family**

The Guidelines include significant detail regarding the recommendations for the care of the stroke patient in the hospital both with and without tPA (pg. 37-43) and with specific comments relevant to nursing (pg. 43-45). These are preceded by the related background information (pg. 24-29). There are several helpful references in the bibliography.



6

## Stroke: Rehabilitation

- 1. Rehabilitation should begin during the acute care in the hospital**
  - Swallow evaluation
  - Maintain joint mobility
  - Assess functional status
  - Minimize risk for complications
- 2. Type of rehabilitation facility for transfer depends on the patients overall condition and rehabilitation potential**
  - Long term acute care hospital
  - Acute rehabilitation hospital
  - Subacute rehabilitation facility (e.g. extended care facility)
  - Outpatient therapy
  - Home-based therapy
- 3. Goals of rehabilitation**
  - Train for maximum recovery
  - Prevent and treat comorbid conditions
  - Enhance psychosocial coping
  - Promote reintegration into the community
  - Prevent recurrent strokes and other vascular events
  - Improve quality of life

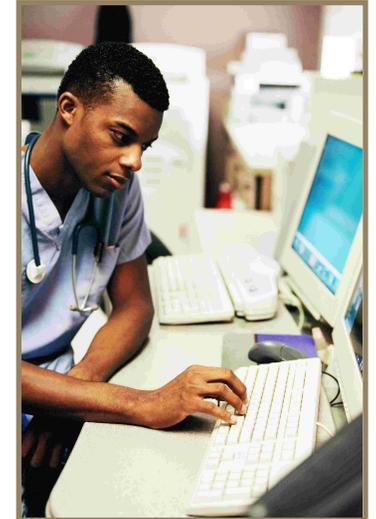
The Guidelines include background on rehabilitation of stroke patients with comments on goals, factors affecting success, rehabilitation settings, staffing, and types of disabilities (pg. 29-31). The recommendations regard the timing of initiation of therapy, preparation for transfer, and the patient factors affecting the type of rehabilitation facility and treatment parameters (pg 45-46). Remarks are also included pertaining to committee on Accreditation of Rehabilitation Facilities (pg. 31&46). Related literature is included on the bibliography.



## Stroke: Hospital Systems

- 1. Stroke protocols**
  - Stroke pathways
  - Standing orders
- 2. Stroke team**
  - Rapid response to ER or other areas of the hospital
  - Multispecialty team
- 3. Stroke center certification**
  - Primary
  - Comprehensive
  - Joint Commission or Healthcare Facilities Accreditation Program
- 4. Hospital interactions**
  - To provide established patterns of transport by EMS to capable facilities
  - To develop hospital networks for patient transfer to facilities w/specific expertise
  - Relationship with rehabilitation facility
  - Enhance patient and staff education

The Guidelines contain background with reference to stroke protocols teams, stroke center certification, communication between hospitals (pg. 31-34). Expanded recommendations regarding these topics are then presented (pg. 46-48). The bibliography contains citations with additional information.



## Use of the Guidelines

The Guidelines are intended to be referenced by anyone involved in the care of patients who have experienced or may be at risk for a TIA or stroke. The Guidelines are divided into three sections, including: risk factors, TIA, and stroke. These sections are further segregated into specific topics that are enumerated in the Table of Contents. Some suggestions for the specific use of the information are described below.

### 1. Nursing

- Specific section regarding nursing is included
- Other sections pertaining to history, examination, and treatment of the patient will also be relevant to nurses
- The section involving hospital system is also relevant to nursing as they are frequently involved in the planning and administration of hospital policies

### 2. Physicians

- The entirety of the Guidelines is relevant to the care of this patient population by the physician

### 3. Therapists

- There are sections specific to rehabilitation
- The sections regarding acute patient care may be helpful to understand the condition and management issues of the patient prior to rehabilitation

### 4. Emergency medical personnel (EMS)

- Sections regarding EMS management are included
- The risk factor information is relevant for the paramedics to help determine potential for stroke in a patient
- Those sections regarding treatment are important for the EMS personnel to understand the implications of their actions in the field and the need for rapid transport

### 5. Hospital administration

- The hospital systems information will be most relevant
- There are examples of stroke protocols in the appendices
- The sections regarding management of the TIA/stroke patient are also important for the administrators to understand those needs and challenges

## Roster

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**Scott, MS, CTRS, Vicki** - Recreational Therapist (Indianapolis)

## Contact Information

For any questions regarding the Guidelines, stroke certification, stroke protocols, management of the stroke patients at any level, or to obtain a speaker for your organization, please contact the Indiana Stroke Prevention Task Force at the Indiana State Department of Health. The telephone number is 317-233-1325, or the Indiana Family Helpline at 1-855-435-7178.