

Stroke: The SPTF EMS Assessment and Beyond

Robert Atkins, NREMT-P AEMD

EMS Director BRMC EMS

Member Indiana Stroke Prevention Task Force

Objectives

- Outline the Stroke Prevention Task Force
- Review National, Network, and State Statistics on Stroke
- Review 2007 Pre-Hospital Stroke Assessment results
- Review Guidelines

The Indiana Stroke Prevention Task Force

- Task Force was established by Gov. Kernan in 2004
- Bill # IC 16-41-41
- Composed of 15 members
- Each member of the Task Force serves a four (4) year term
- Meet monthly at the Indiana State Department of Health

SPTF continued

- 2004 – 2008 Members included:
 1. The State Health Commissioner or designee
 2. Secretary family and social services or designee
 3. Two (2) representative of a stroke support organization
 4. Four (4) physicians
 - a. one (1) physician
 - b. one (1) neurologist
 - c. one (1) neuroradiologist
 - d. one (1) emergency care physician who is a member of the American College of Emergency Physicians
 5. One (1) health care provider who provides rehabilitative services to persons who have had a stroke
 6. One (1) nurse
 7. One (1) representative nominated by the Indiana Health and Hospital Association
 8. One (1) representative from an emergency medical services organization or provider
 9. One (1) representative from the Indiana Minority Health Coalition
 10. One (1) stroke survivor or stroke caregiver
 11. One (1) recreational therapist who provides services to persons who have had a stroke

Duties

1. Complete a statewide comprehensive stroke needs assessment
2. Develop and implement a comprehensive statewide public education program on stroke prevention, targeted to high risk populations and to geographic areas where there is a high incidence of stroke
3. Recommend and disseminate guidelines on the treatment of stroke patients, including emergency stroke care
4. Ensure that the public and health care providers are informed regarding the most effective strategies for stroke prevention
5. Advise the state department concerning grant opportunities for providers of emergency medical services and for hospitals to improve care to stroke patients
6. Study and issue recommendations on other topics related to stroke care and prevention as determined by the chairperson
7. Prepare a report each year on the operation of the task force and provide the report to the governor, the commissioner of the state department, and the legislative council.

Plan 2005

- Develop Guidelines for the prevention, treatment, and post treatment of stroke.
- Focus on Ischemic and TIAs

Procedures

1. Many different fields
2. Many different opinions
3. Based on established treatments
4. Needed prior usage documentation
5. Based on Standard of Care or Best Practices
 - See Guidelines at http://www.in.gov/isdh/files/Indiana_Stroke_Guidelines.pdf

The Guidelines

Three (3) Topics

1. Risk factors for stroke
2. Transient ischemic attack
3. Ischemic stroke

All guidelines were developed from currently available published information and experience as well as from guidelines developed from other organizations.

Stroke Facts

- About 780,000 Americans each year suffer a new (600,000) or recurrent stroke (180,000).
- On average, a stroke occurs every 40 seconds.
- About every 3 minutes, someone dies of a stroke.
- Of every 5 deaths from stroke, 2 are men and 3 are women.
- The estimated direct and indirect cost of stroke in 2008 is \$65.5 billion.

Source: AHA/ASA 2008 Heart Disease and Stroke Statistics

Great Lakes Regional Stroke Network

- Members

Illinois

Indiana

Michigan

Minnesota

Ohio

Wisconsin

GLSN

- Established in 2004
- Funded by the centers for Disease Control and Prevention
- Mission: to optimize collaboration and coordination among the Great Lakes Regional States to reduce the burden of stroke and disparities

<http://www.uic.edu/depts/glstrknet/>

GLRSN

- Webinars and teleconferences
- Disseminate articles and best practices
- Pull states and EMS organizations together
- Share best practices
- Training guides

Types of Risk Factors

- Unmodifiable
 - Definite and modifiable
 - Definite and potentially modifiable
 - Less well documented
- * Stroke is primarily a disease of lifestyle , and is largely preventable through risk factor awareness and modification.

Risk Factors

Unmodifiable

1. Age
2. Gender
3. Race / Ethnicity
4. Heredity

Risk Factors, cont.

Definite and modifiable

1. Asymptomatic carotid artery stenosis
2. Hypertension (27 % Indiana) (U.S. median 24.8%)
3. Coronary artery disease
4. Atrial fibrillation
5. Cigarette smoking (26.1% IN) (22% U.S.)
6. Sickle cell disease
7. Transient ischemic attack / previous stroke

Risk Factors, cont.

Definite and potentially modifiable

1. Diabetes mellitus (7.8% IN) (7.2% U.S.)
 - Increases risk of stroke by 1.4 to 1.7 times
 - No data has indicated that tight control of diabetes decreases the risk of stroke
2. Hyperhomocysteinemia
 - A 5 micromol/liter increase in serum homocysteine is associated with an increased risk of stroke by 1.5 times
 - Risk may increase to 3X in patients with pre-existing vascular disease

Risk Factors, cont

Less well documented

1. Cholesterol and lipids (High Cholesterol 35.1% IN vs. 33.1% U.S.)
2. Other cardiac disease
3. Obesity (26% IN vs. 22.7% U.S.)
4. Physical Inactivity (26.2% IN) (23.1% U.S.)
5. Oral contraceptives / hormone replacement therapy
6. Alcohol / Illicit drugs
7. Hypercoagulability / inflammation
8. Sleep apnea

Stroke Deaths in Indiana

- 4th leading cause of death in 2006
- 5th leading cause of death in men and 4th leading cause of death in women
- 3rd leading cause for blacks and 4th leading cause for whites
- 5th leading cause for hispanics

Indiana Minority Health Coalition, 2008

2007 EMS Assessment

- The Stroke Prevention Task Force made a decision to conduct a series of assessments of pre-hospital and hospital providers starting in early 2007.
- The initial action of the SPTF was to assess the current standards of care, training, and treatments of pre-hospital stroke patients in order to help develop a plan for possible education and standards needed to provide consistent, good care to all stroke/possible stroke patients in Indiana.

Starting the Assessment

- The State of Indiana reports that there are approximately 700,000 calls per year for Emergency Medical Services (EMS).
- The decision was made to focus on only providers that were classified as transport services the total number listed as 331 providers per the EMS section of the Department of Homeland Security (DHS) website.

Why?

- In the State of Indiana, DHS requires the reporting of EMS run statistics, however none of these reports deal specifically with stroke/possible stroke patients.
- It was deemed necessary by the SPTF to gather information per an assessment provided to transport services in the state in order to begin assessing current treatment/s provided and the amount of education received by providers.

How?

- The assessment was posted on-line at the IDHS EMS website in January 2007.
- We received minimal response and it was deemed necessary to mail assessments to providers from lists generated on the IDHS website.
- The initial mailing created enough information to make some informed statistics on the current standards and treatments provided by pre-hospital providers in hopes that future interaction with the providers and the EMS Section of IDHS as well as work with the Indiana State Department of Health (ISDH) and the Great Lakes Stroke Network (GLSN) will increase awareness and help provide future information.

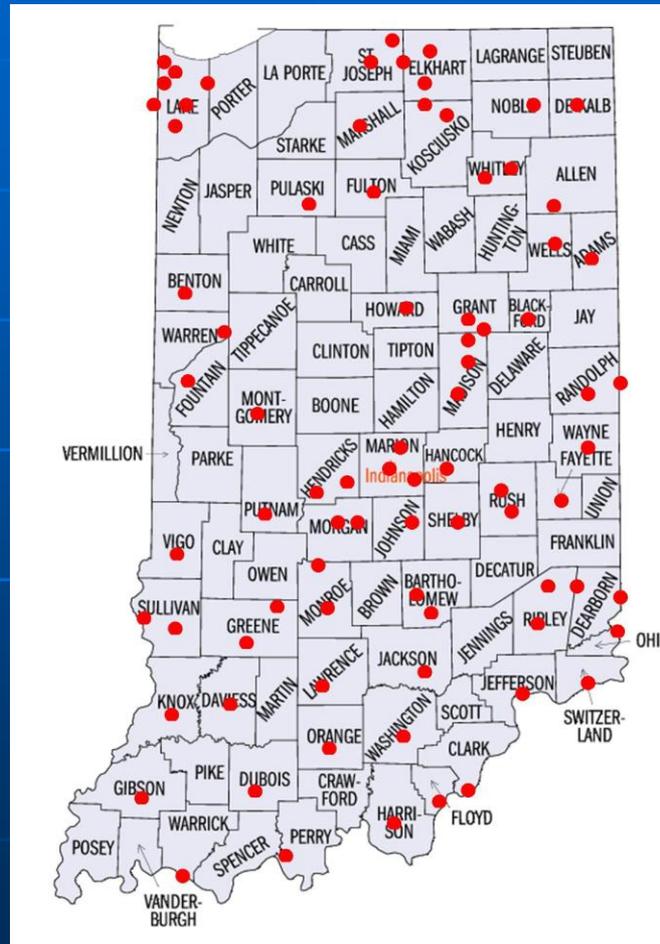
Where did it come from?

- GLRSN partnership
- Samples – Feedback (Minnesota and Wisconsin)
- Review
- Approval by Task Force

Received to date

- 93 surveys completed
- 28% of providers
- Represents 55 of our 92 counties
- Represents 42% of the runs reported in Indiana (294,468/700,000)
- Total reported as Strokes is 4.2% or 12,300 strokes/294,468 calls

The Map



The Question/Answers

- Are possible strokes treated as emergent responses by dispatch in your area?
 - Yes **96%**
 - No **3%**

Concern?

The Question/Answers

- Do your dispatch personnel have Emergency Medical Dispatch Training at this time?
 - Yes **86%**
 - No **12%**

The Question/Answers

- Do you train your dispatchers to identify stroke symptoms by phone?
 - Yes **51%**
 - No **39%**
 - **Unknown 3%**

Concern?

The Question/Answers

- How frequently are your EMS and Dispatch personnel trained on stroke?
- Quarterly **6%**
- Semi-annually **7%**
- Once a year **51%**
- Once every two to three years **13%**
- Only when initially trained **15%**

Concern?

The Question/Answers

- What forms of training on stroke are offered or encouraged by your EMS organization for field and dispatch personnel?
 - In-person seminar/classroom **86%**
 - On-line **24%**
 - DVD or Video **38%**
 - Other **12%**

The Question/Answers

- Do you have a written protocol or standing operating procedure specific to stroke treatment?
 - Yes **92%**
 - No **6%**
 - If yes, please identify the treatments that are included: (check all that apply)
 - Patient Positioning **62%**
 - Oxygen **95%**
 - I.V. **71%**
 - Heart Monitor **73%**
 - Medication Administration **28%**
 - Blood Glucose Check **67%**
 - Airway for unconscious patients **88%**
 - Other treatments **27%**

The Question/Answers

- What tools and/or scales do you presently use to identify that a patient is having a possible stroke?
- Cincinnati Stroke Scale **85%**
- Los Angeles Pre-hospital Stroke Screen (LAPSS) **5%**
- FLAGS **4%**
- FAST **1%**
- NIH Modified **1%**
- Other **6%**

Stroke Scales-Cincinnati

The patient is asked to show teeth or smile

- Normal - both sides of face move equally well
- Abnormal - one side of face does not move as well as the other side

The patient is asked to close both eyes and hold both arms straight out for 10 seconds

- Normal - both arms move the same or both arms do not move at all
- Abnormal - one arm does not move or one arm drifts down

The patient is asked to repeat a simple phrase, such as "You can't teach an old dog new tricks"

- Normal - patient uses correct words with no slurring
- Abnormal - patient slurs words, uses the wrong words or is unable to speak

Stroke Scales-LAPSS

Screening Criteria:

Age over 45 years _____

No prior history of seizure disorder _____

New onset of neurologic symptoms in last 24 hours _____

Patient was ambulatory at baseline (prior to event) _____

Blood glucose between 60 and 400 _____

Exam: look for obvious asymmetry

	Normal	Right	Left
■ Facial smile / grimace:		Droop	Droop
■ Grip:		Weak Grip or No Grip	
■ Arm weakness:		Drifts Down or Falls Rapidly	

Stroke Scales-FLAGS

- **"F" Face** – Check face for symmetry in smile, *no droop at rest.*
- **"L" Legs** – Lift each leg for 5 seconds, *no drift.*
- **"A" Arms** – Hold arms straight out in front of body for 5 seconds, *no drift*
- **"G" Grips** – Ask the patient to squeeze your hands as hard as possible, *follow command with equal grips.*
- **"S" Speech** – Ask the patient to repeat "the whole kit and kaboodle, *follow the command with no speech difficulty.*

The Question/Answers

- What is the earliest your EMS personnel typically notify the destination hospital with the information that they are treating/transporting a possible acute stroke patient?
 - at scene **12%**
 - immediately en-route **39%**
 - as soon as possible en-route **53%**
 - On arrival at destination hospital **1%**

The Question/Answers

- Is the timeliness of your notification of the destination hospital based on protocol?
 - Yes **51%**
 - No **46%**

The Question/Answers

- Where do your EMS field providers record stroke scale data?
 - Written run report **70%**
 - Computerized report **27%**
 - Separate report given to receiving facility **4%**
 - Receiving facility paperwork **6%**
 - Other **4%**

The Question/Answers

- Do you use or utilize some form of Thrombolytic Eligibility Checklist in the field?
 - Yes **24%**
 - No **77%**

The Question/Answers

- Do you have a written protocol and/or policy to determine where acute stroke patients are transported?
 - Yes **40%**
 - No **57%**
 - If yes is it:
 - Written policy **16%**
 - Contractual **0**
 - Unwritten/verbal agreement **2%**
 - Ambulance Service Protocol **20%**
 - Standard unwritten procedure (habit) **8%**

The Question/Answers

- How frequently do you utilize a helicopter for transporting suspected stroke patients?
 - Very Often **0**
 - Often **1%**
 - Sometimes **10%**
 - Infrequently **22%**
 - Never **67%**

The Question/Answers

- Do you ever bypass one or more hospitals to transport suspected stroke patients to a hospital with more stroke care capabilities?
 - Yes **33%**
 - No **65%**

The Question/Answers

- If you would bypass a hospital to go to another with greater stroke care capabilities, what would be the average additional mileage to the final destination hospital?
 - 0-9 miles **26%**
 - 10-24 miles **23%**
 - 25-49 miles **25%**
 - 50+ miles **9%**

The Question/Answers

What kind of attention do your suspected stroke patients typically receive at the destination hospital?

- Specialized stroke team is waiting and ready to care for patient. **18%**
- Patient is assessed by ED physician within 10 minutes. **37%**
- Patient is assessed by nursing staff on arrival. **39%**
- Varies from patient to patient **15%**
- Don't know **13%**

The Question/Answers

Do the destination hospitals in your area typically administer thrombolytics to eligible stroke patients?

- Yes **58%**
- No **5%**
- Don't Know **34%**

The Question/Answers

How do the destination hospitals in your area typically transport acute stroke patients in need of specialized stroke care not provided at their facility?

- Ground **59%**
- Air **33%**
- Other **6%**
- Unknown **13%**

The Question/Answers

In your opinion, what steps or training is needed to improve stroke care in your area?

- Good training resources
- Public Education
- More access to specialty care in rural areas
- Greater reaction from ED staff after reports given
- EMS Commission Protocols
- Identification of area hospitals as Stroke Centers
- Frequent training
- ER requirement training/awareness
- Educating ED staff of the abilities of EMS personnel
- Physician and ED staff Education

Final Answers continued 1

- CT availability 24/7
- Quicker patient turn around from arrival at initial destination to transfer to a more advanced facility for further treatment
- Help in the critical decision to transport patients to a more appropriate destination
- Frustration that treatments started in the field are not continued in the ED
- Checklists
- Partnership
- Hospital sits on patients
- It takes time to update in certain areas

Final Answers continued 2

- Dispatch specific training
- State Protocols
- Access to 24 hour Neurology/Neurologist
- National guidelines/courses
- Stroke Center requirements/JCAHO
- List of hospital capabilities to services
- Stroke specific certifications
- Required Stroke Teams at all hospitals
- Standardized protocol
RURAL>THROMBOLYTICS>TRANSFER
- Updated training per new standards on a regular basis/format

What's New

- 2008 – 2012 SPTF per IC 16-41-41
 - (a) The task force consists of eighteen (18) members as follows:
 - (1) The state health commissioner or the commissioner's designee.
 - (2) The secretary of family and social services or the secretary's designee.
 - (3) Two (2) representatives of a stroke support organization.
 - (4) Four (4) physicians with an unlimited license to practice medicine under IC 25-22.5 and with expertise in stroke, including at least:
 - (A) one (1) physician;
 - (B) one (1) neurologist;
 - (C) one (1) physician with expertise in the area of cerebrovascular accidents
 - (D) one (1) emergency care physician who is a member of the American College of Emergency Physicians.
 - (5) One (1) health care provider who provides rehabilitative services to persons who have had a stroke.
 - (6) One (1) nurse with a license to practice under IC 25-23 and who has experience in the area of cerebrovascular accidents.
 - (7) One (1) representative nominated by the Indiana Hospital Association.
 - (8) One (1) representative from an emergency medical services organization or provider.
 - (9) One (1) representative from the Indiana Minority Health Coalition.
 - (10) One (1) stroke survivor or stroke survivor caregiver.
 - (11) One (1) recreational therapist who provides services to persons who have had a stroke.
 - (12) One (1) representative from the Indiana Primary Health Care Association.
 - (13) One (1) representative from the health insurance industry.
 - (14) One (1) clinical pharmacist who practices in the community and not in a hospital.

Assigned Tasks

- (2) Develop a standardized stroke template checklist for emergency medical services protocols to be used statewide.**
- (3) Develop a thrombolytic checklist for emergency medical services personnel to use.**
- (4) Develop standardized dispatcher training modules**
- (5) Develop a yearly training update and continuing education unit for first responders that includes the Cincinnati Stroke Scale**
- (6) Develop an integrated curriculum for providers, including:**
 - (A) emergency medical services personnel;**
 - (B) hospitals;**
 - (C) first responders;**
 - (D) physicians; and**
 - (E) emergency room staff.**
- (7) Develop a standard template of protocols that include thrombolytic treatment.**

What's Next

1. Finishing Hospital Assessment/Survey
2. Creating Best Practice Templates
3. Educational Materials
4. Funds/Grants
5. Follow-up with EMS Suppliers and Providers

Quick Guideline Review

Emergency Medical System

a) Recognition

1) Dispatch

(a) Should be able to recognize suspicious complaints as possible stroke symptoms

- Confusion
- Weakness
- Falling
- Dizziness

(b) Should communicate possibility of stroke to emergency personnel in field

Quick Guideline Review

2) On-site

(a) Cincinnati pre-hospital stroke scale

- Language
- Facial weakness
- Arm weakness (drift)

(b) Awareness of other conditions similar to stroke

- Seizure
- Hypoglycemia
- Hyperventilation

b) Management

1) On-site

(a) Check vital signs

(b) Intervene with any life threatening conditions

(c) Consider oxygen administration if oxygen saturation is less than 93%

(d) Obtain History

- Time of onset
- Type of onset: gradual vs. abrupt
- Onset while awake or asleep
- Duration of symptoms
- Nature of symptoms

Quick Guideline Review

2) Transport

- (a) As soon as possible
- (b) Start intravenous access
- (c) Nothing by mouth
- (d) Contact ER destination and notify nature of problem and estimated time of arrival
- (e) Check blood sugar by finger stick
- (f) Place patient on cardiac monitor

3) Transfer to ER care

- (a) Provide clinical information
 - Time of symptom onset
 - Symptoms
 - Findings of examination
- (b) Provide medication list

QUESTIONS?

THE END or The Beginning!

Robert "Bob" Atkins
ratkins@brmchealthcare.com