Moving Stroke Care Forward in Indiana

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Indiana's Stroke Snapshot

- Approximately 120 emergency-admitting hospitals (non VA or pediatric) in the state
- 1 Comprehensive Stroke Center; 40 Primary Stroke Centers; 4 Acute Stroke Ready Hospitals
- Indiana's stroke mortality rate in 2014 was 41.7%, versus the national rate of 36.5%
- Stroke remains the 4th leading cause of death in Indiana, while it is the 5th leading cause of death nationally
- Stroke remains the leading cause of severe adult disability nationally

The Problem: Inefficiency of Care

- Hoosiers who suffer a stroke are too often taken via EMS to hospitals unable to provide sufficient acute stroke care
- These patients are often then processed and sent right back out the door on a second ambulance to a second hospital with the necessary capabilities, or they forego more advanced care entirely
- Minutes count during a stroke, and this type of delay can mean the difference between returning to work or permanent disability; between life and death

How big a problem is this in Indiana?

- According to a state-by-state Get With The Guidelines Target: Stroke review of door-to-needle times using 2014 data, Indiana came in 41st out of the 43 states and territories that participated
- Specifically, Indiana hit the target of door-to-needle within 60 minutes just 43.7% of the time, outpacing Arkansas and New Hampshire, but falling behind everyone else
- This is not exhaustive data and Indiana's numbers have likely improved somewhat, but it is a telling example of just how serious a challenge we face

Performance Improvement & Target Stroke

GOAL 75%

Target: Stroke Phase II aims to achieve Door-to-Needle Times within 60 minutes in 75% or more of acute ischemic stroke patients treated with IV tPA.*

*Eligible Get With The Guidelines®-Stroke/Target: Stroke acute ischemic stroke patients treated between January 2014 to December 2014

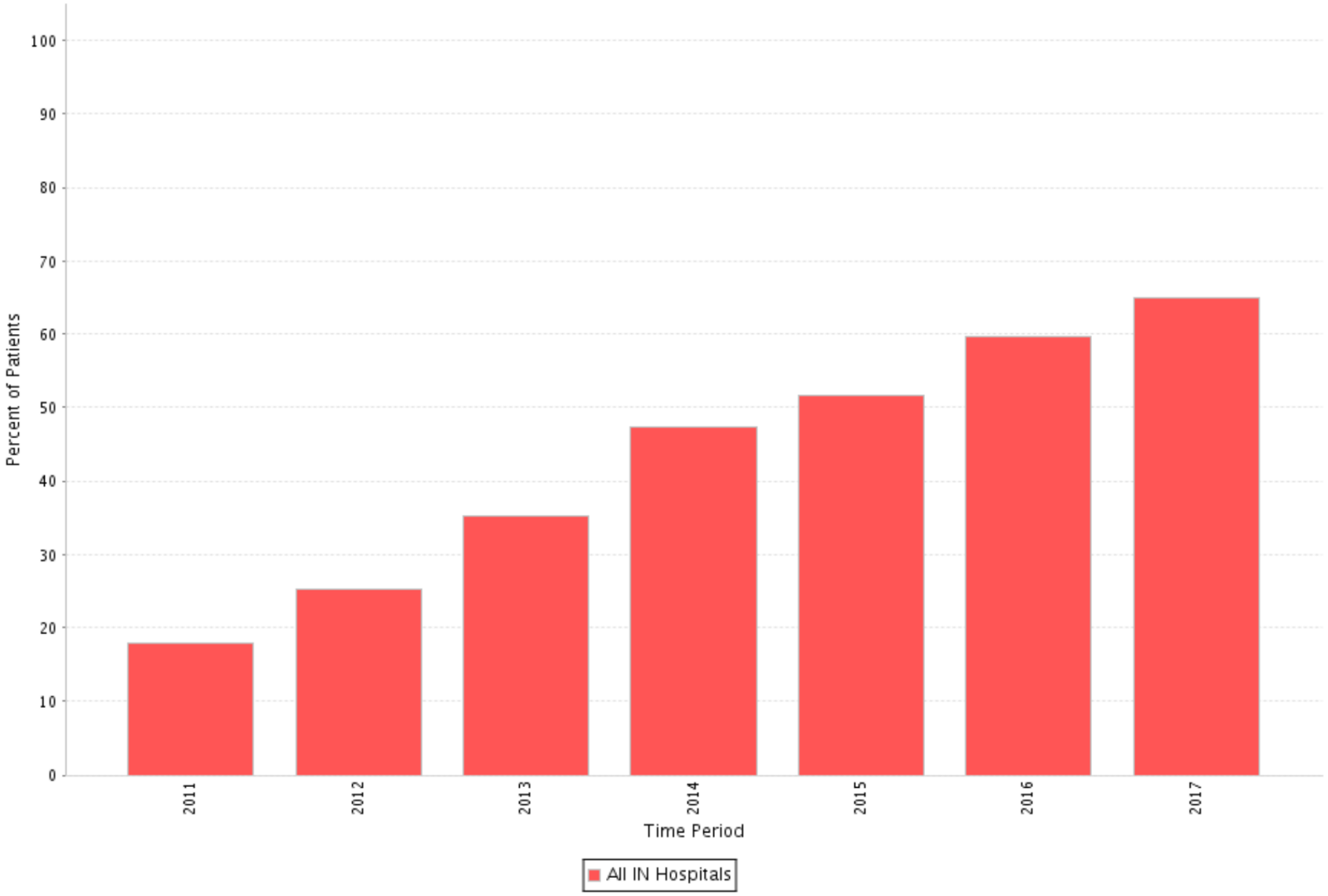
FEWER THAN 4 HOSPITALS PER STATE

Alaska
Idaho
Iowa
Montana
New Mexico
North Dakota
Vermont
Wyoming

50-74%

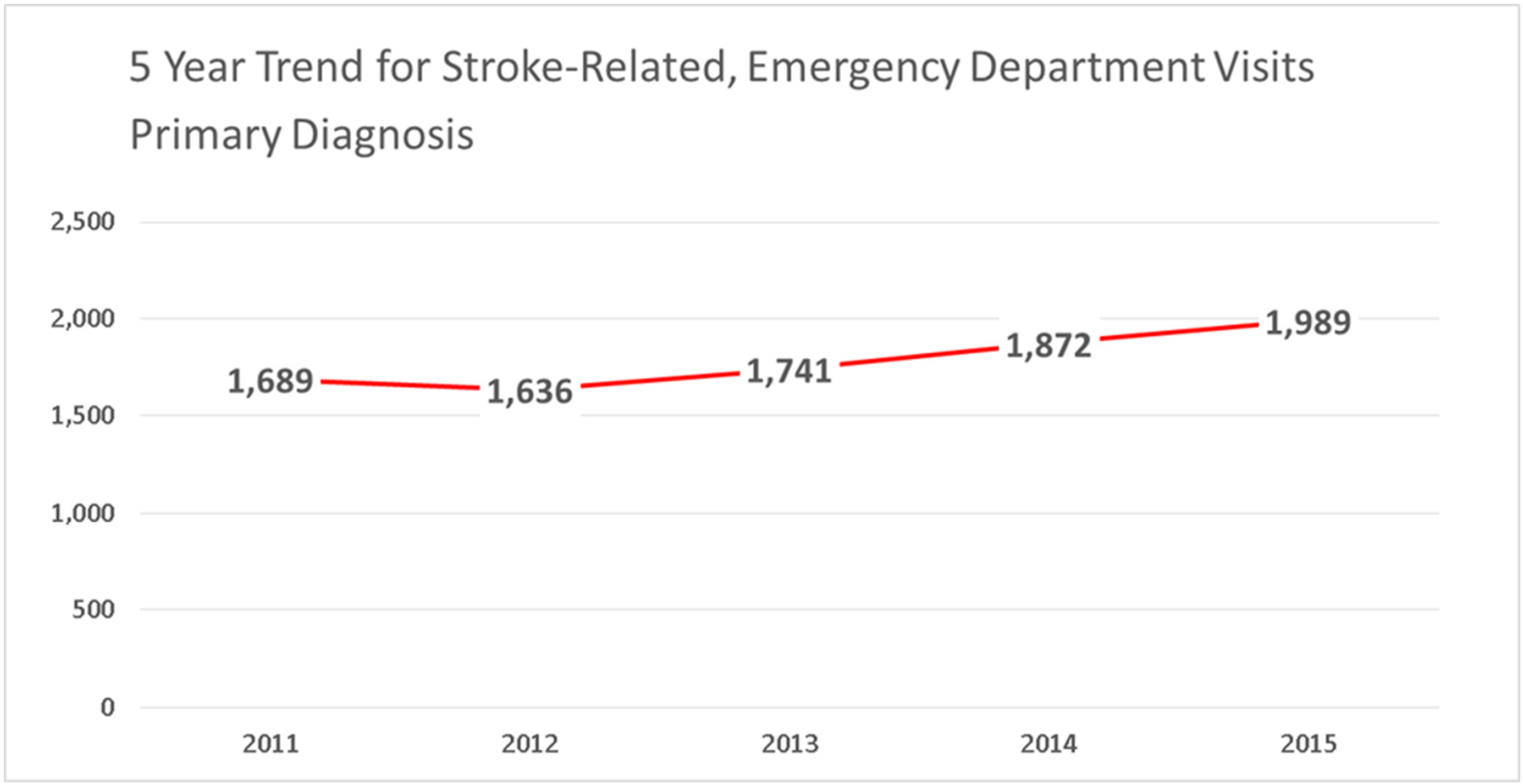
25-49%

75-100%



Time to Intravenous Thrombolytic Therapy - 60 min

Percent of acute ischemic stroke patients receiving intravenous tissue plasminogen activator (tPA) therapy during the hospital stay who have a time from hospital arrival to initiation of thrombolytic therapy administration (door-to-needle time) of 60 minutes or less. Time Period: 01/2011 - 12/2017



Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. 2017

*The emergency department visits do not represent the number of people who had a stroke within that year. Hospital discharge data are de-identified, which hinders the unduplication of patient visits.

How to Fix it – Stroke Legislation

Looking at national science and the experiences of other states that have successfully addressed similar issues, we worked with Rep. Denny Zent (R-Angola) to introduce HB 1145 this past January, a bill designed to:

- Ensure that Indiana's EMS regions develop and adopt stroke-focused EMS protocols based on national standards and written with a focus on local needs and resources
- Ensure that the Dept. of Health maintains a list of designated stroke centers based on national stroke certification at CSC, PSC, and ASRH levels, as well as a list of non-certified network hospitals with written transfer agreements to higher levels of care

Impact of Stroke Legislation on Developing Stroke Systems of Care and Improving Acute Therapy: The Illinois Experience

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Background

Stroke is a leading cause of death and disability. In 2009, Illinois passed stroke legislation that established a Stroke Advisory Subcommittee to advise the State EMS Advisory Council. The legislation also created 11 EMS Regional Stroke Advisory Subcommittees. Primary Stroke Centers and Emergent Stroke Ready Hospitals were formally recognized, and EMS routing protocols were updated. Comprehensive Stroke Centers were recognized in 2014, and EMS routing protocols were further updated.

Hypothesis

Implementation of the Illinois stroke legislation by EMS regions enhances stroke systems of care, improves collaboration between hospitals and EMS, and improves intervention times and outcomes.

Methods

- Data were ascertained from the Illinois Get With the Guidelines (GWTG) stroke registry from 2009-2015.
- Ninety two unique hospitals entered data from 2009-2015.
- Data points included number of patients, arrival mode, those treated or eligible for IV Alteplase, median door to needle (DTN) times, DTN times of 60 minutes or less, and discharge to home.
- Statistical analyses were performed using chi-square testing

Results

Table 1. Hospitals and Patients Enrolled in GWTG-Stroke in Illinois 2009-2015

Year	Total IL Hospitals Participating in GWTG	Total GWTG stroke patient records	Acute Ischemic Stroke (AIS) Patients Entered into GWTG	AIS patients eligible for IV Alteplase
2009	27	10530	6193	289
2010	38	13077	8094	411
2011	52	14201	9109	628
2012	60	15385	9964	598
2013	73	29288	9977	570
2014	76	19633	10719	650
2015	82	21779	12981	864

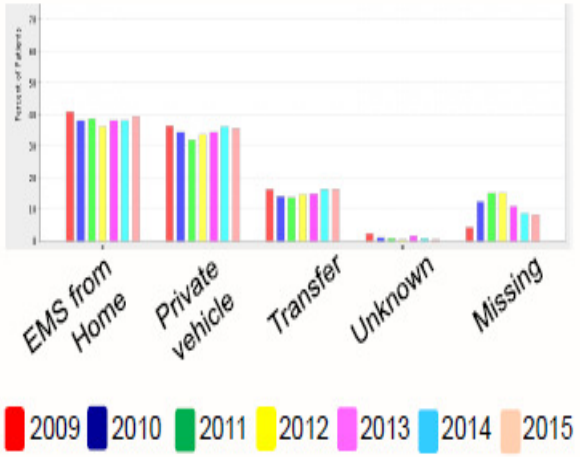
Table 2. Types of Hospitals Participating in GWTG-Stroke in Illinois

Year	Total IL Hospitals Participating in GWTG	ASRHs	PSCs	CSCs	Not Certified as Stroke Center
2009	27	0	14	0	13
2010	38	0	27	0	11
2011	52	0	35	0	17
2012	60	0	36	0	24
2013	73	0	44	0	29
2014	76	1	45	4	26
2015	82	19	46	5	12

Table 3. Performance Metrics for Hospitals Participating in GWTG-Stroke in Illinois

Year	Median Door-to-Needle Times (minutes)	% DTN times ≤ 60 min	Discharge to Home
2009	85	18%	38.0%
2010	84	18.5%	36.8%
2011	81	26.1%	32.9%
2012	73	33.9%	43.8%
2013	63	47.4%	45.4%
2014	56	60.9%	45.3%
2015	56	62.4%	44.1%

Figure 1. Arrival Mode of All Hospitals Participating in GWTG-Stroke in Illinois.



36-41% of patients arrived by EMS from home/scene
31-36% of patients arrived by private transportation

DTN times for IV Alteplase went from 85 minutes in 2009 to 56 minutes in 2015, a 34% relative decrease
P< 0.0001

Percent of patients with DTN times of 60 minutes or less increased from 18% in 2009 to 63% in 2015
P < 0.0001

Limitations

- Data are limited to GWTG facilities
- Definite causation between the stroke legislation and these results cannot be firmly established, as other changes in patient care might have accounted for some or all of these changes
- An increase in the number of certified stroke centers may have also played a role in the improved care metrics
- The definitions for discharge destinations changed during the course of the study

Conclusions

- Illinois observed a clear and significant improvement in several care metrics for patients with acute ischemic stroke
- These changes occurred after the passage of state legislation related to the identification of stroke centers and routing of stroke cases
- This experience is a good example of stakeholders working in a cooperative manner to improve stroke care on a state level

For more information, contact Kathleen O'Neill at kathleen.oneill@heart.org

Quintiles is the data collection coordination center for the AHA/ASA Get With The Guidelines® programs

Dr. Alberts is a speaker for Genentech, which markets Alteplase

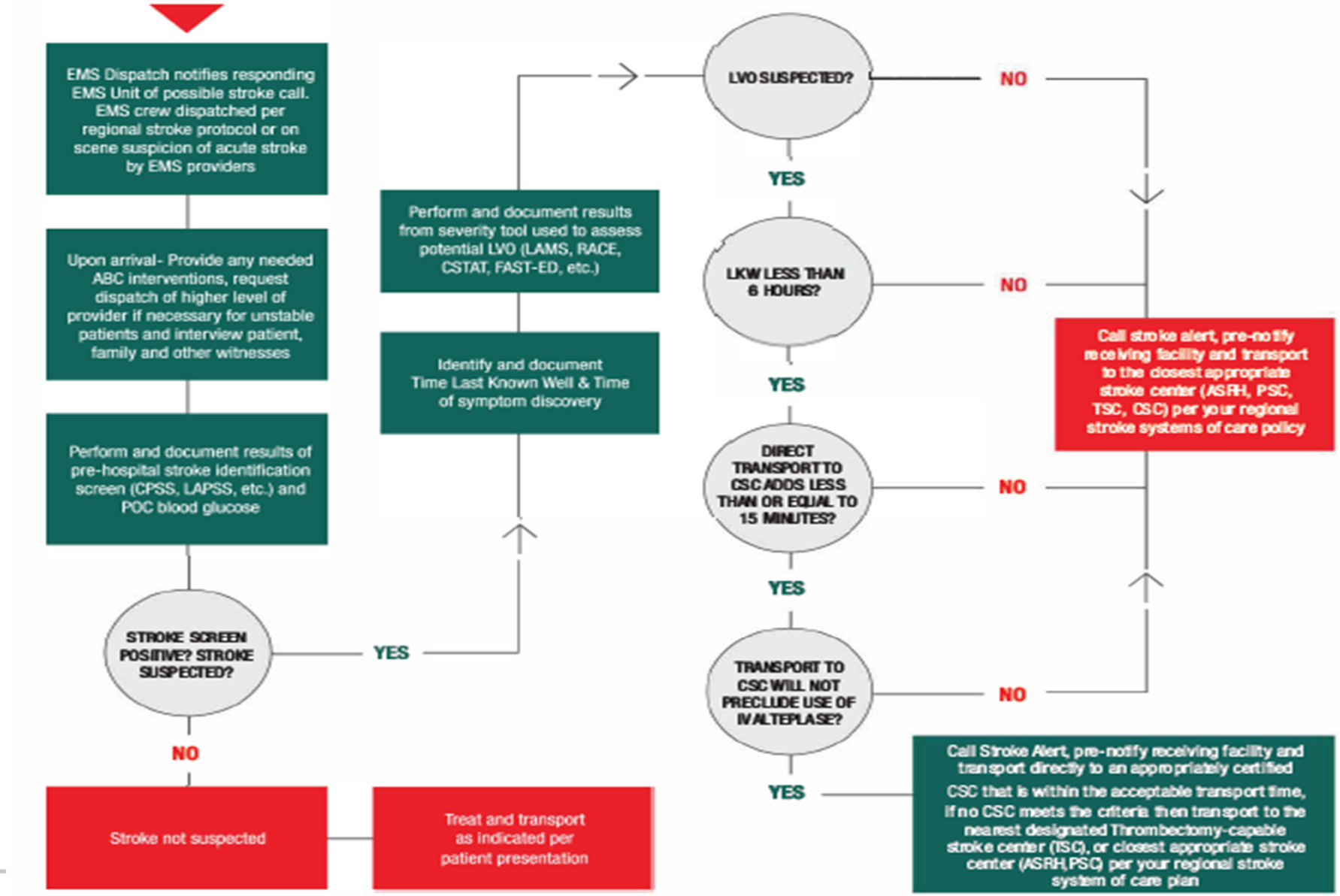
Stroke Legislation Process

- The AHA/ASA worked with stakeholders including the IN Hospital Assoc., the Stroke Consortium of IN, the IN EMS Assoc., the IN State Medical Assoc., and the IN Depts. of Health and Homeland Security to fine-tune the bill via amendment language
- Once all parties were on board, HB 1145 moved quickly through the House and Senate and was signed by Gov. Holcomb on April 24
- HB 1145 requires that administrative rules be finalized by July 1, 2018, though it is likely that the rule will not be finalized until later this summer or early fall

Implementing the New Stroke Law: EMS-focused Administrative Rules

- The IN Dept. of Homeland Security is managing the administrative rule-writing process for the EMS-focused components of the new stroke law, and created a stakeholder group to assist with the drafting/formulation
- The final draft was approved by the IN EMS Commission on May 17, 2018, and now awaits sign-off from the Governor's office before a formal public comment period can begin

SEVERITY-BASED STROKE TRIAGE ALGORITHM FOR EMS



Implementing the New Stroke Law: Hospital Designation

- The Indiana Dept. of Health will create and maintain a regularly updated list of Comprehensive Stroke Centers, Primary Stroke Centers, and Acute Stroke Ready Hospitals, and will update the IN Dept. of Homeland Security promptly of any change in hospital certification status
- Stroke-certified hospitals would provide ISDH with proof of their current certification as a CSC, PSC, or ASRH from an approved national certifying body
- Non-certified hospitals wishing to be on the network hospital list would provide ISDH with a copy of their transfer agreement/s with certified stroke centers

A Rural Solution: Acute Stroke Ready

- In November of 2013, the Brain Attack Coalition released a paper setting definitive guidelines for a new class of hospital stroke certification: Acute Stroke Ready
- The Brain Attack Coalition serves as the keeper of national guidelines with regard to stroke, and is comprised of 16 national nonprofit, professional, and governmental stakeholders including the American Stroke Association, the American College of Emergency Physicians, the American Academy of Neurology, and the CDC
- The Acute Stroke Ready certification was designed to meet demanding national science-based guidelines while still being achievable for smaller hospitals

A Rural Solution: Acute Stroke Ready

- Indiana currently has two hospitals certified as Acute Stroke Ready:
  - Johnson Memorial, Franklin, IN
  - Franciscan Mooresville, Mooresville, IN
  - Margaret Mary Community Hospital, Batesville, IN
  - St. Joseph Regional Medical Center, Plymouth, IN

- Additional rural hospitals achieving Acute Stroke Ready certification would help ensure a greater geographic spread of certified stroke centers

Potential Next Step: A Statewide Stroke Registry

- Once a stroke systems law is in place, many states have then taken the additional step of establishing a statewide stroke registry to better understand and improve stroke outcomes, because as the saying goes, “you can’t improve what you don’t measure”
- Ideally a state stroke registry would make use of hospital’s existing data collection tools and processes, minimizing the burden to hospitals and the cost to the state while ensuring the collection of at least the 8 CMS-recognized core measures, and preferably the 10 Coverdell/AHA recommended stroke performance measures

Questions?

Thanks for your time!

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