

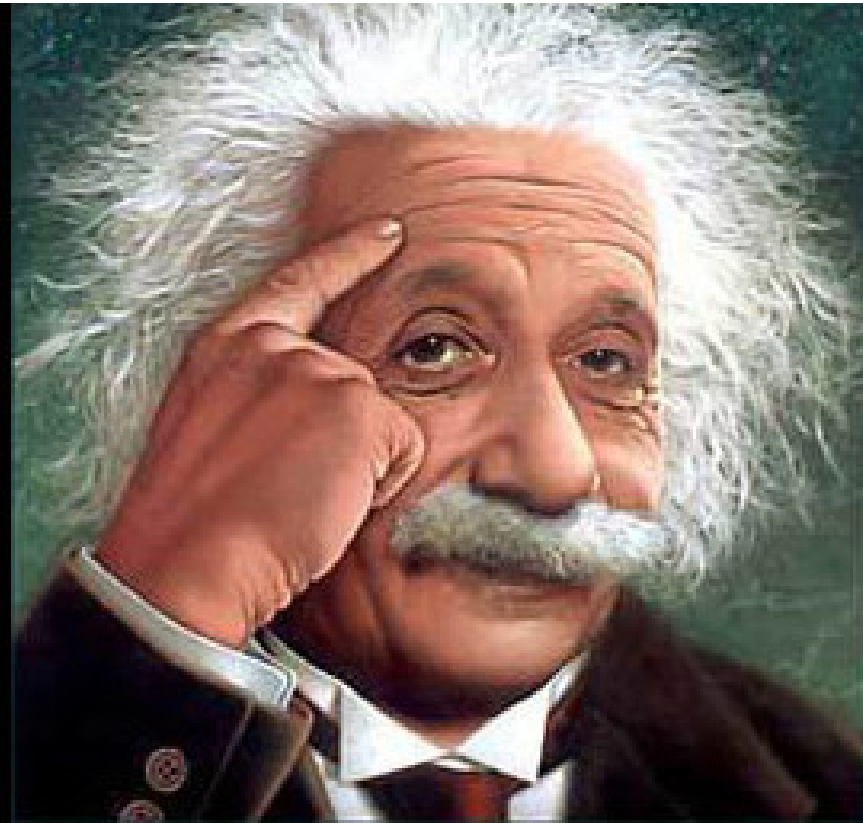
# Connecticut State Meeting

14<sup>th</sup> Annual

NorthEast Cerebrovascular Consortium

October 24, 2019





Insanity: doing the same thing  
over and over again and  
expecting different results.

--Albert Einstein

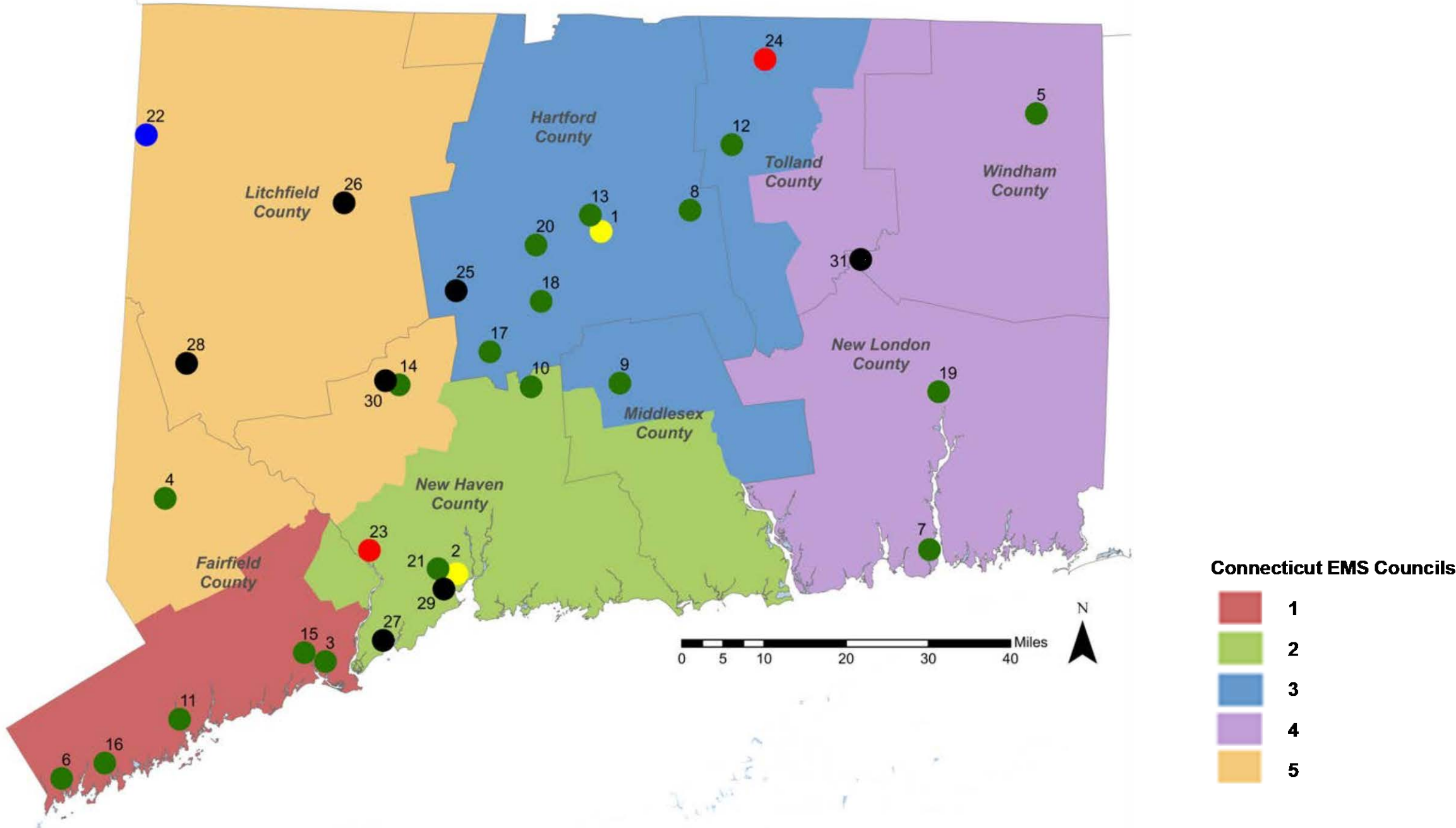


“Without data  
you’re just  
another person  
with an opinion.”

- W. Edwards Deming,  
Data Scientist

# 2019 Stroke Center Certifications for Connecticut Hospitals and EMS Councils




As of April 1, 2019



- **TJC - Comprehensive Stroke Center**
- 1 HARTFORD HOSPITAL
- 2 YALE NEW HAVEN HOSPITAL - YORK STREET

- **TJC - Primary Stroke Center**
- 3 BRIDGEPORT HOSPITAL
- 4 DANBURY HOSPITAL
- 5 DAY KIMBALL HOSPITAL
- 6 GREENWICH HOSPITAL ASSOCIATION
- 7 LAWRENCE + MEMORIAL HOSPITAL
- 8 MANCHESTER MEMORIAL HOSPITAL
- 9 MIDDLESEX HOSPITAL
- 10 MIDSTATE MEDICAL CENTER

- **TJC - Primary Stroke Center (cont.)**
- 11 NORWALK HOSPITAL ASSOCIATION
- 12 ROCKVILLE GENERAL HOSPITAL
- 13 SAINT FRANCIS HOSPITAL AND MEDICAL CENTER
- 14 SAINT MARY'S HOSPITAL
- 15 ST VINCENT'S MEDICAL CENTER
- 16 STAMFORD HOSPITAL
- 17 THOCC- BRADLEY MEMORIAL CAMPUS
- 18 THOCC- NEW BRITAIN CAMPUS
- 19 THE WILLIAM W. BACKUS HOSPITAL
- 20 UCONN HEALTH/JOHN DEMPSEY HOSPITAL
- 21 YALE NEW HAVEN HOSPITAL - ST. RAPHAEL

	<b>HFAP - Primary Stroke Center</b>
22	SHARON HOSPITAL
	<b>TJC - Acute Stroke Ready Hospital</b>
23	GRIFFIN HOSPITAL
24	JOHNSON MEMORIAL HOSPITAL
	<b>No Stroke Certification</b>
25	BRISTOL HOSPITAL
26	CHARLOTTE HUNGERFORD HOSPITAL
27	MILFORD HOSPITAL
28	NEW MILFORD HOSPITAL
29	VA CONNECTICUT HEALTHCARE - WEST HAVEN
30	WATERBURY HOSPITAL
31	WINDHAM HOSPITAL

# GWTG Hospitals

Bridgeport Hospital

Greenwich Hospital

Griffin Hospital

Hartford Hospital

Lawrence & Memorial  
Hospital

Manchester Memorial  
Hospital

Midstate Medical Center

Norwalk Hospital

Rockville General  
Hospital

Saint Francis Hospital  
and Medical Center

Sharon Hospital

St. Vincent's Medical  
Center

Stamford Hospital

The Hospital of Central  
Connecticut

UConn Health/John  
Dempsey Hospital

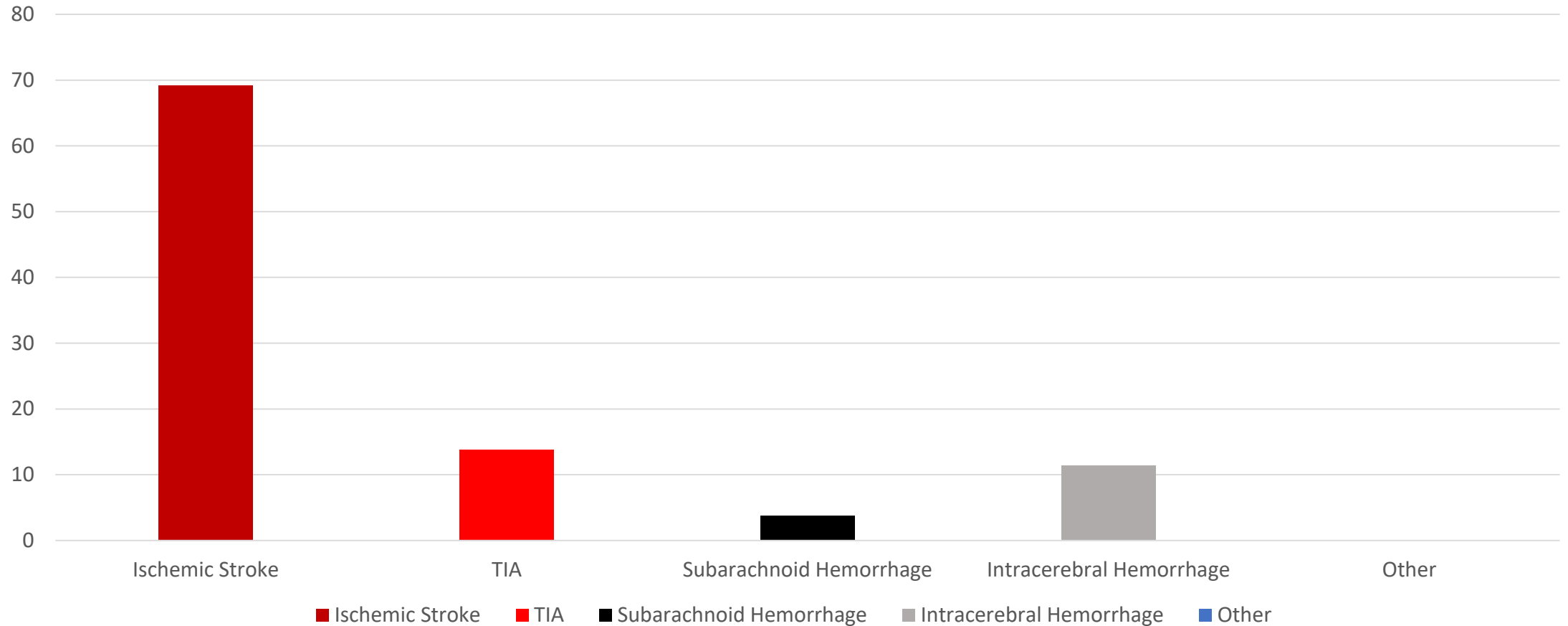
Waterbury Hospital

William W. Backus  
Hospital

Windham Memorial  
Hospital

Yale New Haven Hospital

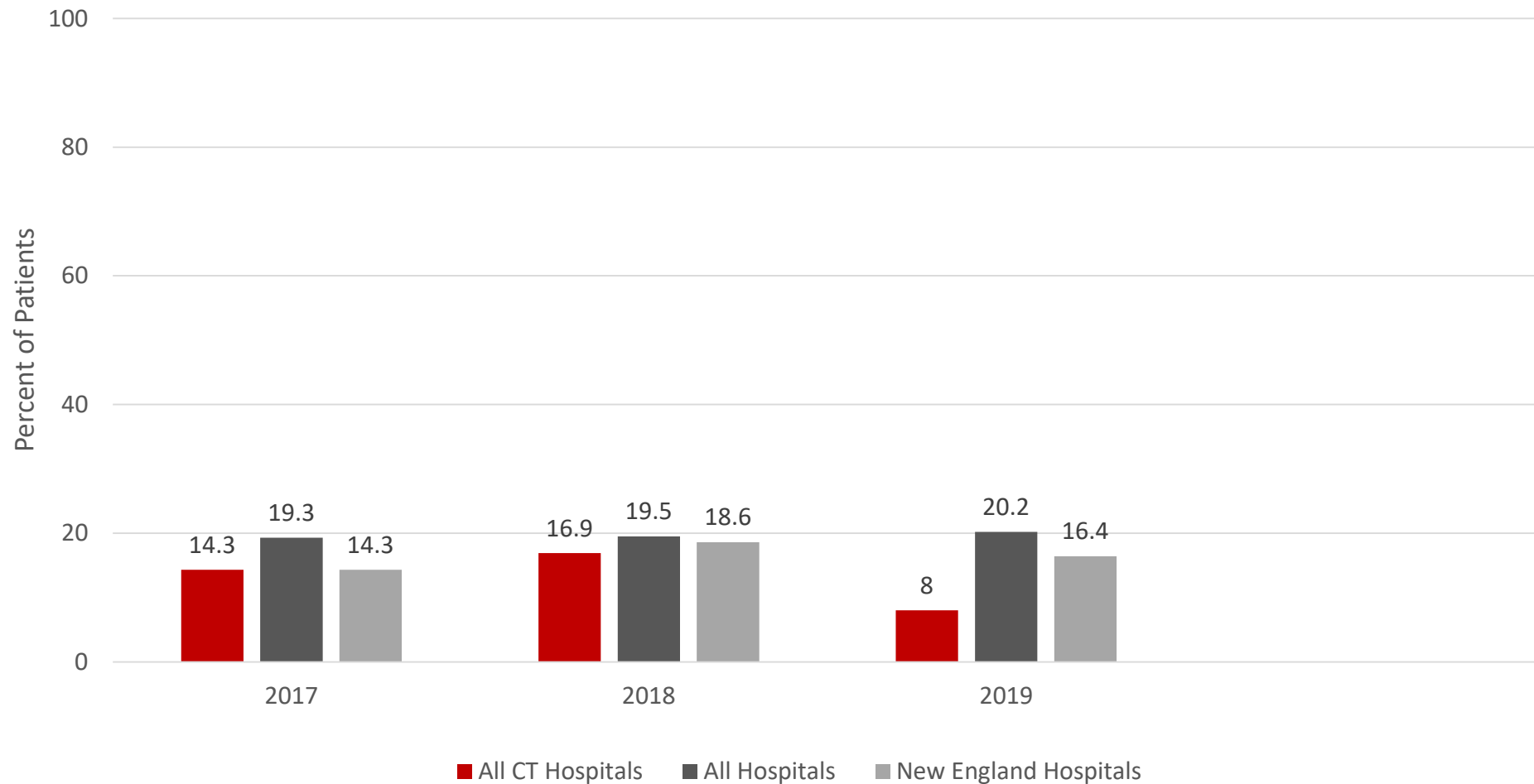
# Stroke Diagnosis – January-September 2019



<b>Ischemic stroke</b>	<b>TIA</b>	<b>Subarachnoid Hemorrhage</b>	<b>Intracerebral Hemorrhage</b>	<b>Other</b>
2895	577	161	479	73

# Door-in-Door-Out Times at First Hospital Prior to Transfer for Acute Therapy

Percentage of confirmed stroke patients for whom  $\leq 90$  minutes was spent in the ED prior to transfer to a higher-level stroke center (e.g. PSC, CSC, etc.) for time-critical therapy.



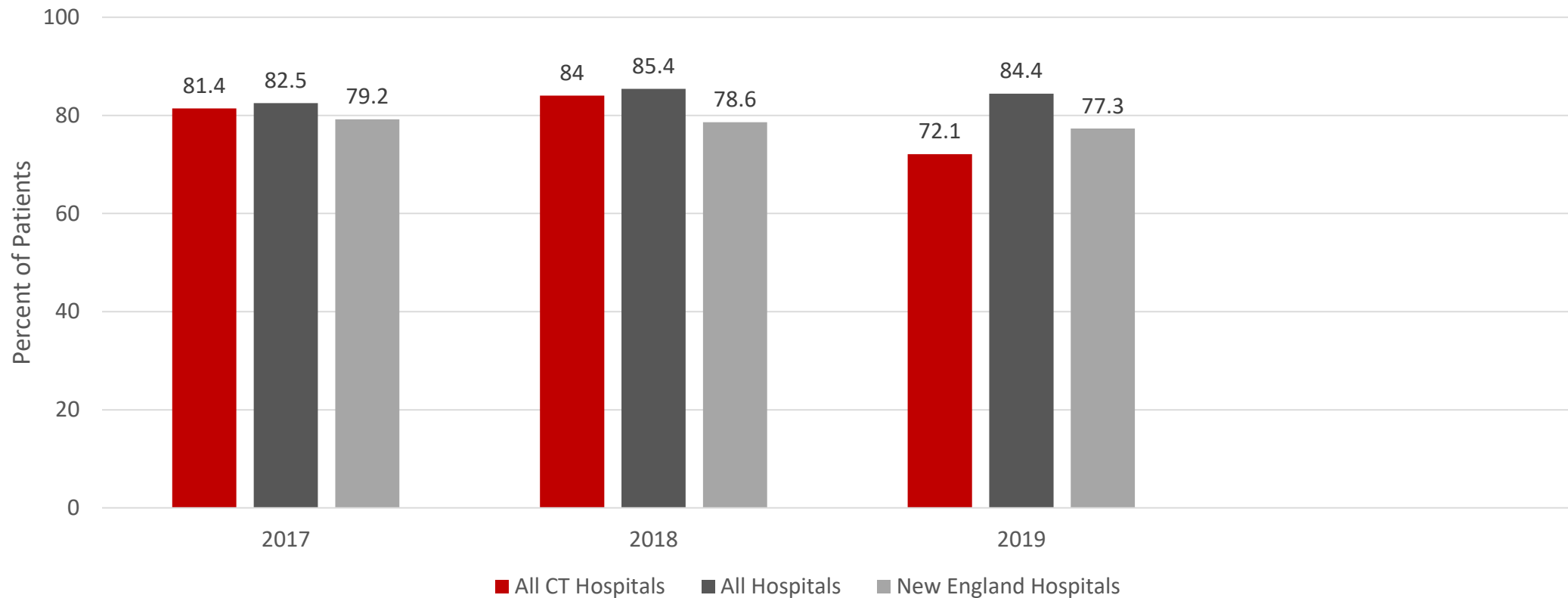
# Door-in-Door-Out Times at First Hospital Prior to Transfer for Acute Therapy

## Door-in-Door-Out Times at First Hospital Prior to Transfer for Acute Therapy

Benchmark Group	Time Period	Numerator	Denominator	% of Patients
All CT Hospitals	2017	1	7	14.3%
All CT Hospitals	2018	13	77	16.9%
All CT Hospitals	2019	4	50	8.0%

## IV Alteplase Arrive by 3.5 Hour, Treat by 4.5 Hour

Percent of acute ischemic stroke patients who arrive at the hospital within 210 minutes (3.5 hours) of time last known well and for whom IV alteplase was initiated at this hospital within 270 minutes (4.5 hours) of time last known well.



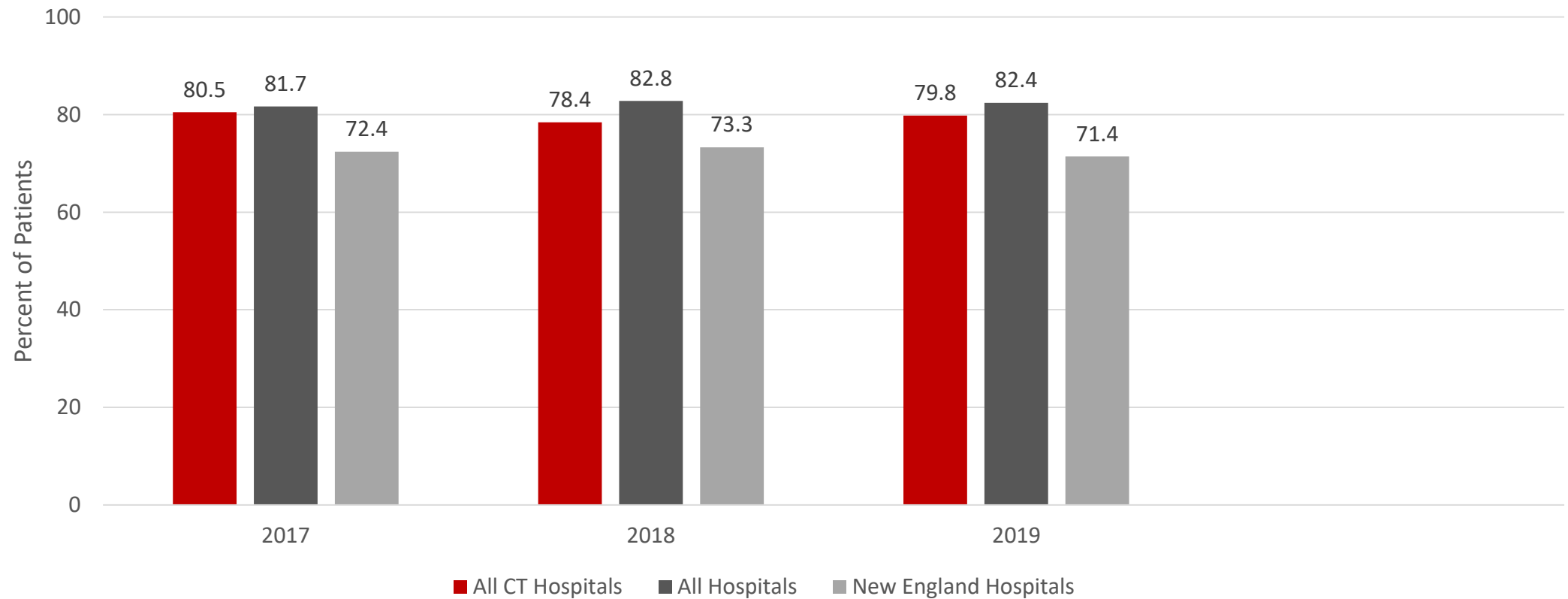
# IV Alteplase Arrive by 3.5 Hour, Treat by 4.5 Hour

## IV Alteplase Arrive by 3.5 Hour, Treat by 4.5 Hour

Benchmark Group	Time Period	Numerator	Denominator	% of Patients
All CT Hospitals	2017	346	425	81.4%
All CT Hospitals	2018	379	451	84.0%
All CT Hospitals	2019	256	355	72.1%

# Time to Intravenous Thrombolytic Therapy-60 min

Percent of acute ischemic stroke patients **eligible** who received intravenous tissue plasminogen activator (alteplase) 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 to Intravenous Thrombolytic Therapy-60 min

## Time to Intravenous Thrombolytic Therapy - 60 min

Benchmark Group	Time Period	Numerator	Denominator	% of Patients
All CT Hospitals	2017	194	241	80.5%
All CT Hospitals	2018	232	296	78.4%
All CT Hospitals	2019	158	198	79.8%

# Stroke System Measures



## **EMS**

Hospital Pre-Notification

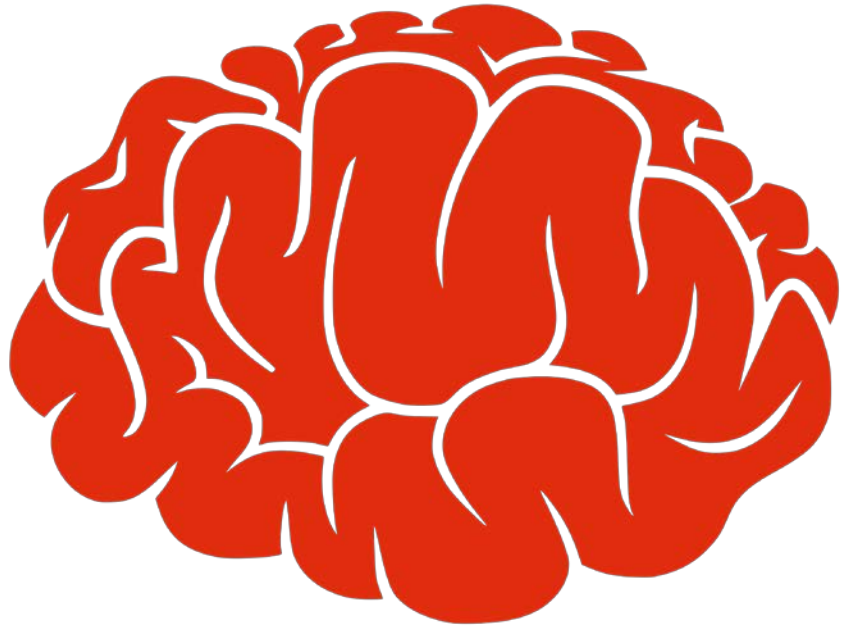
On-scene times for suspected stroke

## **Referring Centers**

Door-In-Door-Out

## **Receiving Centers**

Time from First EMS First Medical  
Contact to Endovascular Treatment



# Overview of Survey Responses

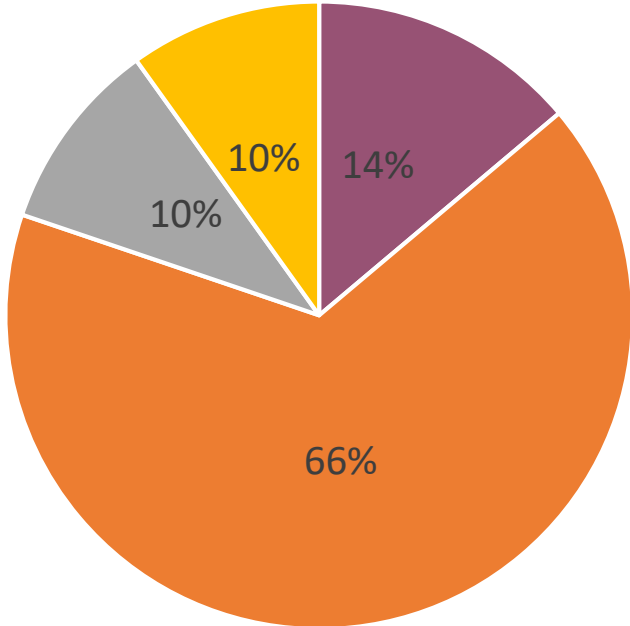
2019 Connecticut Stroke Advisory Council Survey

Results compiled by Von Jessee, AHA/ASA  
Survey generated by SOC/SAC acute group

# Overview of Respondents

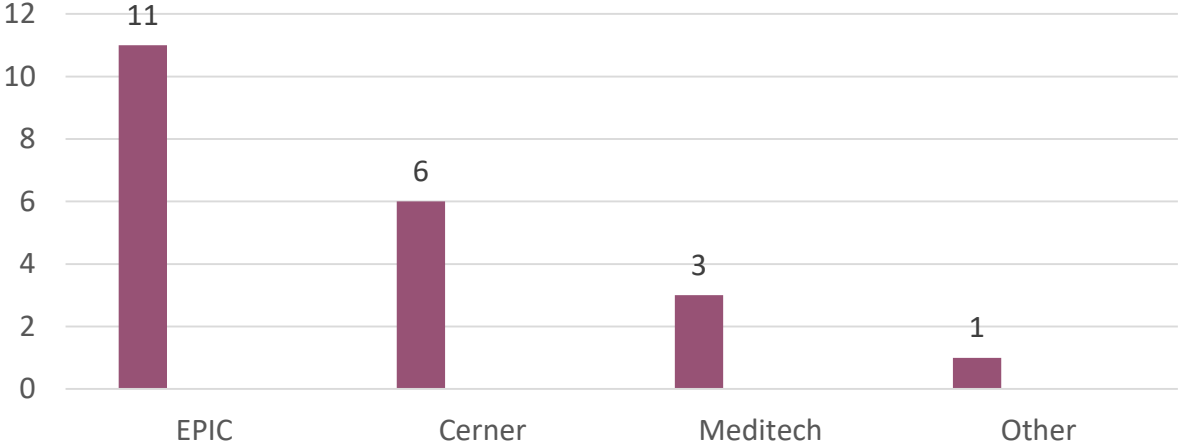
- Responses from 21 hospitals in Connecticut
- All sites have on-site ED
  - One hospital with 2 satellites
  - One Hospital with 1 satellite
- All sites receive acute stroke patients by EMS

ED Stroke Alert Patients Per Year

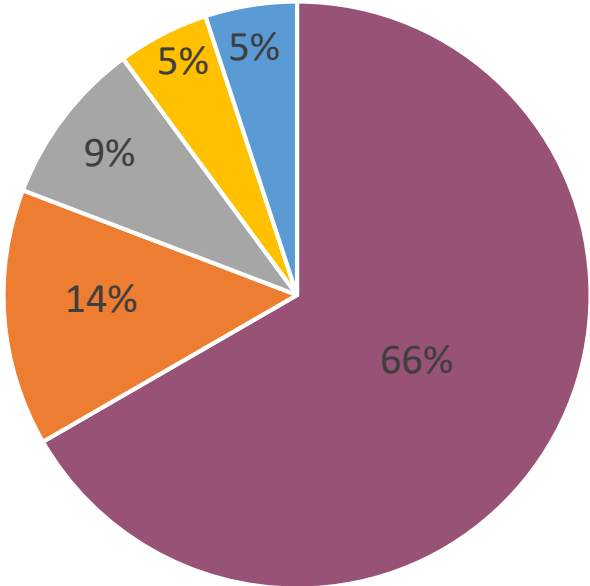


■ 20-100 ■ 100-500 ■ 500-1000 ■ 1000-2000

EHR USED



Certification Types

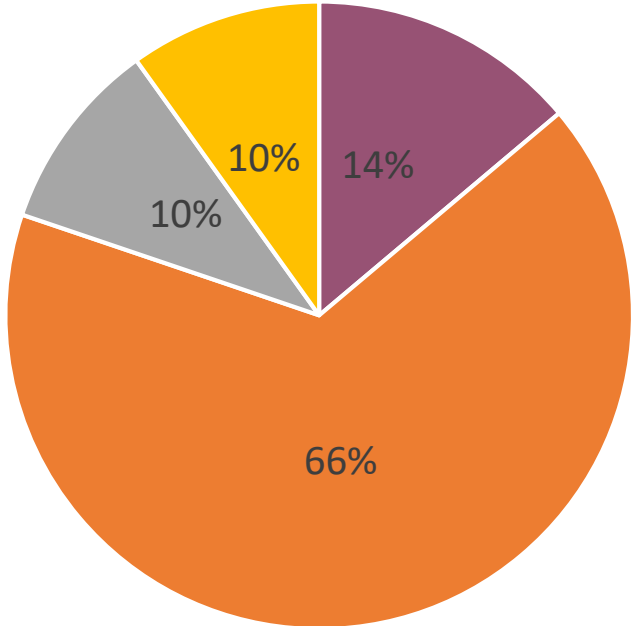


■ Primary Stroke w/o Throm. ■ Primary Stroke Throm. Cap. ■ Comprehensive Stroke  
 ■ Acute Stroke Ready ■ Not Certified

# Overview of Respondents

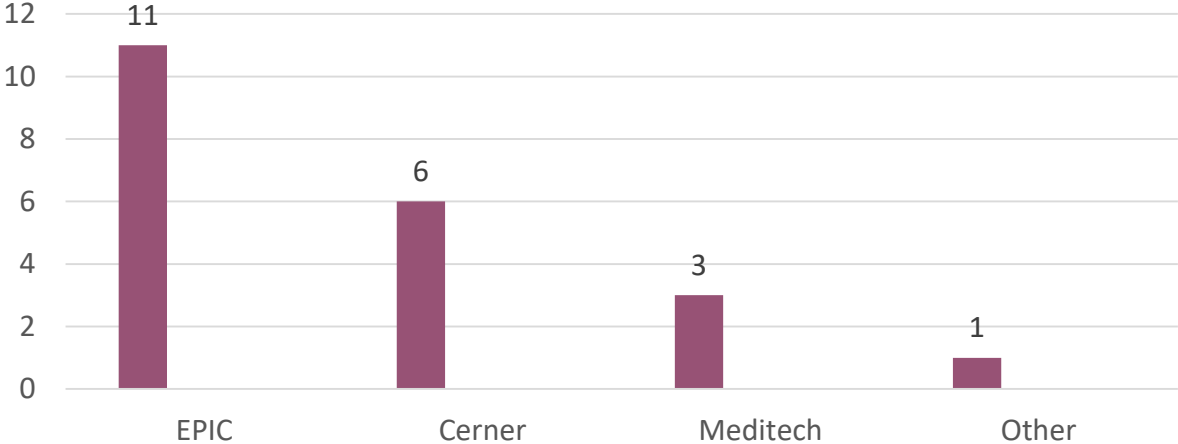
- Responses from 21 hospitals in Connecticut
- All sites have on-site ED
  - One hospital with 2 satellites
  - One Hospital with 1 satellite
- All sites receive acute stroke patients by EMS

ED Stroke Alert Patients Per Year

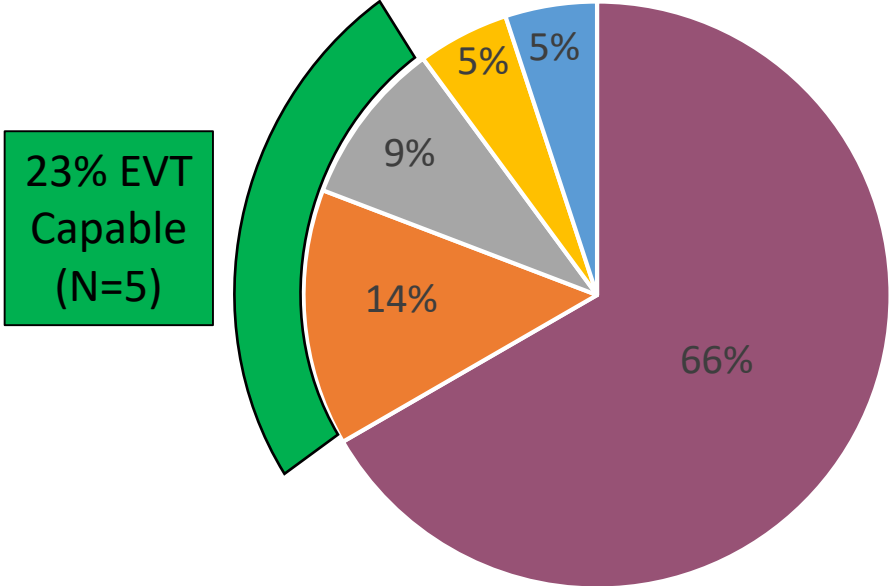


■ 20-100 ■ 100-500 ■ 500-1000 ■ 1000-2000

EHR USED



Certification Types

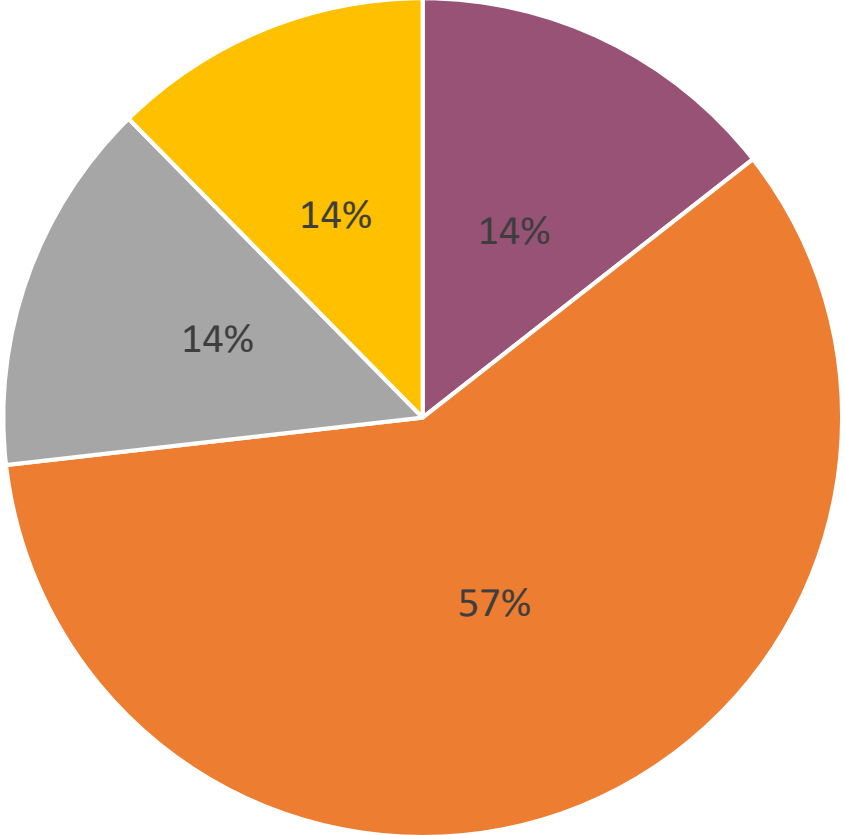


■ Primary Stroke w/o Throm. ■ Primary Stroke Throm. Cap. ■ Comprehensive Stroke  
 ■ Acute Stroke Ready ■ Not Certified

# Endovascular Thrombectomy

\*\*\*7 hospitals reported performing endovascular thrombectomy's\*\*\*  
(1 per 792 sq miles; 1 per 510,428 persons)\*

# of interventionalists:



85% have  $\geq 2$  Interventionalists

■ 1 interventionalist ■ 2 interventionalist ■ 3 interventionalist ■ >3 interventionalist

# Hospitals Coverage for IV TPA Cases\*

	<b>M-F 8:00am-5:00pm</b>	<b>M-F 5:00pm-8:00am; Weekends</b>
In-person Vascular Neurologist	10 hospitals	3 hospitals
In-person General Neurologist	10 hospitals	2 hospitals
In-person Vascular Neurologist Fellow or Neurology Resident	3 hospitals	2 hospitals
On call vascular or general neuro. to come into site for TPA and/or select cases within 30 min window	13 hospitals	12 hospitals
In-person coverage from provider of another specialty	7 hospitals	6 hospitals
Telestroke	12 hospitals	13 hospitals
Telephone	12 hospitals	12 hospitals

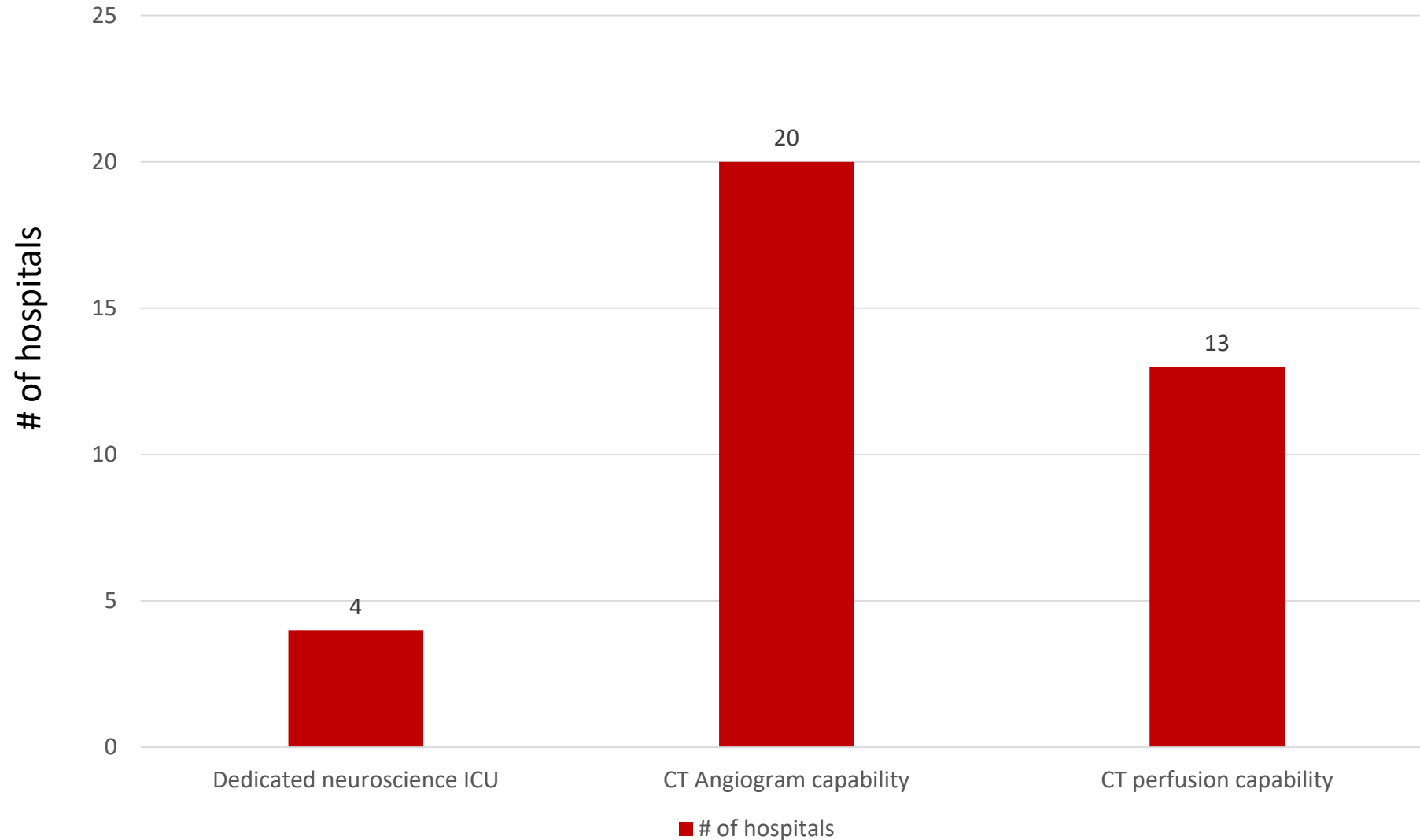
\*Respondents selected “all that apply”

# TPA Preparation During On- and Off- Hours

	<b>M-F 8:00am-5:00pm</b>	<b>M-F 5:00pm-8:00am; Weekends</b>
Pharmacists	9 hospitals	10 hospitals
Emergency medicine nurses with in-person pharmacy oversight/assistance	4 hospitals	1 hospital
Emergency medicine nurses without in-person pharmacy oversight/assistance	8 hospitals	11 hospitals
Rapid Response Team	2 hospitals	2 hospitals
ED nurses for ED Stroke; Pharmacy for inpatient strokes	1 hospital	1 hospital

24/7 in-house pharmacy coverage – 16 Hospitals

# Diagnostic/Therapeutic Resources



\*one site  
did not  
respond

# Hospitals with Acute MRI availability for Acute Stroke Patients

	<b>M-F 8:00am- 5:00pm</b>	<b>M-F 5:00pm- 8:00am; Weekends</b>
Yes, with an MRI in the ED/ED radiology	2 hospitals	1 hospital
Yes, in MRI in radiology	16 hospitals	5 hospitals
None	3 hospitals	15 hospitals

# Cloud Imaging Sharing Across Hospitals

<b>Imaging cloud availability:</b>	<b>Total = 12</b>
Sectra	2
Visage	1
Life Image	1
ImageConnect	1
PACS	2
Yes, unspecified	5

# Off-label interventions if there is preliminary evidence prior to the modification of treatment guidelines

---

## 6 hospitals perform interventions off-label

Extended window TPA (within 4.5-9 hours)	0
TPA for wake up stroke patients	0
Thrombectomy for patients with low NIHSS (<6)	6
Thrombectomy for some patients with large cores	2
Utilization of Tenecteplase	0
Half dose TPA for anticoagulation patients	0

---

# Stroke Leadership Interests:

Quarterly calls with the state stroke leaders to talk about off-label use of interventions

8 responses

Quarterly state journal club telephone conferences to discuss the translation of new clinical trial results to the bedside

11 responses

Having a state list-serve for stroke leaders to communicate

14 responses

Have the states' Comprehensive Stroke Centers provide alternating workshops and/or webinars for providers

10 responses

An annual state summit of stroke leaders for discussing guidelines, best practices, and new clinical trial results

16 responses

# Next Steps

- Analyze and share remaining data
- Get 100% response rate
- Get EM level data for all satellite Eds
- Perform future survey on other phases of care

**We would like to  
thank everyone who  
provided responses to  
our survey!**

# All hospitals - CTA 24/7 (except Milford Hospital)

CTP: The following hospitals **have** CTP:

1. Backus Hospital
2. Danbury Hospital
3. Hospital of Central Connecticut/  
New Britain Campus
4. Midstate Medical Center
5. New Milford Hospital
6. Norwalk Hospital
7. St. Francis Hospital
8. St. Vincent's Medical Center
9. Stamford Hospital
10. UCONN John Dempsey Hospital
11. Hartford Hospital
12. Yale New Haven Hospital
13. Windham Hospital

# The following Hospitals DO NOT have CTP

1. Johnson Memorial Hospital
2. Bridgeport Hospital
3. Bristol Hospital
4. Day Kimball Hospital
5. Greenwich Hospital
6. Griffin Hospital
7. Bradley campus of Hospital of Central Connecticut
8. Lawrence & Memorial Hospital
9. Manchester Memorial Hospital
10. Middlesex Hospital
11. Rockville General Hospital
12. Sharon Hospital
13. St. Mary's Hospital
14. Waterbury Hospital
15. St. Raphael's campus of Yale New Haven Hospital
16. Charlotte Hungerford Hospital
17. Milford Hospital
18. VA of CT

# Public Testimony on March 19, 2014 leading to the passage of Public Act 14-214





**Senate Bill No. 438**

**Public Act No. 14-214**

**AN ACT CONCERNING A TASK FORCE TO STUDY STROKE AND REPORTING ON HEALTH CARE-ASSOCIATED INFECTIONS.**

Be it enacted by the Senate and House of Representatives in General Assembly convened:

Section 1. (*Effective from passage*) (a) There is established a task force to study stroke. Such study shall include, but not be limited to, a review of: (1) The feasibility of adopting a nationally recognized stroke assessment tool; (2) establishment of care protocols for emergency medical service organizations relating to the assessment, treatment and transport of persons with stroke; (3) establishment of a plan to achieve continuous quality improvement in the care provided to persons with stroke and the system for stroke response; and (4) the feasibility and costs of establishing and maintaining a state-wide, hospital stroke designation program administered by the Department of Public Health.

(b) The task force shall consist of the following members:

- (1) Two representatives of the American Academy of Neurology, one of whom shall also be a representative of a hospital that is not certified as a stroke center, appointed by the speaker of the House of Representatives;
- (2) Two representatives of the Stroke Coordinators of Connecticut, one of whom shall also be a representative of a hospital that is not certified as a stroke center, appointed by the president pro tempore of the Senate;
- (3) Two representatives of the Connecticut College of Emergency Physicians, one of whom shall also be a representative of a hospital that is not certified as a stroke center, one each appointed by the majority leader of the House of Representatives and the majority leader of the Senate;
- (4) One representative of the American Heart Association, appointed by the minority leader of the House of Representatives;
- (5) One representative of the Connecticut Hospital Association, appointed by the minority leader of the Senate;
- (6) The Commissioner of Public Health, or the commissioner's designee;
- (7) Two members appointed by the Commissioner of Public Health; and
- (8) One member representing the Emergency Medical Services Advisory Board, appointed by the Governor.



**Senate Bill No. 438**

**Public Act No. 14-214**

**AN ACT CONCERNING A TASK FORCE TO STUDY STROKE AND REPORTING ON HEALTH CARE-ASSOCIATED INFECTIONS.**

Be it enacted by the Senate and House of Representatives in General Assembly convened:

Section 1. (*Effective from passage*) (a) There is established a task force to study stroke. Such study shall include, but not be limited to, a review of: (1) The feasibility of adopting a nationally tool; (2) establishment of care protocols for emergency medical service organizations relating to the assessment, treatment and transport of persons with stroke; (3) establishment of a plan to improvement in the care provided to persons with stroke and the system for stroke response; and (4) the feasibility and costs of establishing and maintaining a state-wide, hospital stroke des by the Department of Public Health.

(b) The task force shall consist of the following members:

- (1) Two representatives of the American Academy of Neurology, one of whom shall also be a representative of a hospital that is not certified as a stroke center, appointed by the speaker of th
- (2) Two representatives of the Stroke Coordinators of Connecticut, one of whom shall also be a representative of a hospital that is not certified as a stroke center, appointed by the president p
- (3) Two representatives of the Connecticut College of Emergency Physicians, one of whom shall also be a representative of a hospital that is not certified as a stroke center, one each appoint the House of Representatives and the majority leader of the Senate;
- (4) One representative of the American Heart Association, appointed by the minority leader of the House of Representatives;
- (5) One representative of the Connecticut Hospital Association, appointed by the minority leader of the Senate;
- (6) The Commissioner of Public Health, or the commissioner's designee;
- (7) Two members appointed by the Commissioner of Public Health; and
- (8) One member representing the Emergency Medical Services Advisory Board, appointed by the Governor.



**REPORT TO THE CONNECTICUT GENERAL ASSEMBLY  
FROM THE STATE LEGISLATED STROKE TASK FORCE  
PA 14-214**

**February 1, 2016**

**Raul Pino, MD, MPH, Acting Commissioner**



State of Connecticut  
Department of Public Health  
410 Capitol Avenue  
P.O. Box 340308  
Hartford, CT 06134-0308

**AN ACT CONCERNING A TASK FORCE TO STUDY STROKE AND**

Be it enacted by the Senate and House of Representatives in General Assem

Section 1. *(Effective from passage)* (a) There is established a task force to stu  
tool; (2) establishment of care protocols for emergency medical service orga  
improvement in the care provided to persons with stroke and the system for  
by the Department of Public Health.

(b) The task force shall consist of the following members:

(1) Two representatives of the American Academy of Neurology, one of who

(2) Two representatives of the Stroke Coordinators of Connecticut, one of w

(3) Two representatives of the Connecticut College of Emergency Physician  
the House of Representatives and the majority leader of the Senate;

(4) One representative of the American Heart Association, appointed by the

(5) One representative of the Connecticut Hospital Association, appointed by

(6) The Commissioner of Public Health, or the commissioner's designee;

(7) Two members appointed by the Commissioner of Public Health; and

(8) One member representing the Emergency Medical Services Advisory Bo

These recommendations are aimed at enhancing stroke systems of care in our state so that every citizen will have rapid and equal access to the most up-to-date acute therapies and interventions for stroke. Summary analyses and recommendations of the task force include, but are not limited to:

- (1) The creation of a State of Connecticut Stroke Steering Committee working in conjunction with The Commissioner of Public Health (or his/her designees) to make recommendations to strengthen state-wide stroke systems of care based upon nationally recognized guidelines.***
- (2) All EMS providers across the state should use a nationally recognized stroke assessment tool. All EMS providers should also utilize pre-hospital care protocols developed in conjunction with the Connecticut EMS Advisory Board (CEMSAB) with its Medical Advisory Committee (CEMSMAC) as the principle committee of review, in conjunction with the Connecticut Stroke Steering Committee, and approved by the Commissioner of Public Health .***
- (3) A plan for continuous quality improvement in stroke care should be developed and implemented by the Connecticut Stroke Steering Committee in conjunction with the Department of Public Health. Such plan would include, but not be limited to the utilization of a nationally recognized data set platform as a state-wide stroke registry.***
- (4) The Department of Public Health with the aid of the Connecticut Stroke Steering Committee should establish, and periodically review, a process for recognizing third-party stroke center certification. This Task Force recommends that every receiving facility undergo a process of certification and subsequent DPH Designation in order to best clarify their role within the state-wide stroke system of care.***

MBLY  
ORCE

# **GOALS for the CT Stroke Steering Committee a.k.a. SOC- SAC now**

- Identify key clinical issues in order to promulgate best practice
- Identify and evaluate stroke care-related disparities across the state
- Focus efforts and resources for quality assurance/improvement
- Transition quality projects into best practices (continue to refine best practice based on quality assurance)
- Building an educational support team to serve both healthcare professionals and surrounding communities

# **SOC/SAC Work Groups defined**

- EMS
- Hyper-acute Care
- Acute Stroke Recovery Care
- Acute Rehabilitation
- Home Care and Long-term Care
- Community Outreach
- State Liaison Work



“Without data  
you’re just  
another person  
with an opinion.”

- W. Edwards Deming,  
Data Scientist



911

EMS

Hospitals