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

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CONNECTICUT GENERAL ASSEMBLY REPORT FROM THE STATE LEGISLATED STROKE TASK FORCE

January 27, 2016

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I. LEGISLATIVE APPOINTED TASK FORCE MEMBERS AND CONTENT EXPERTS

Name:	*Appointment or Invitation* by:*
Chair	
Charles R Wira, III, MD	Majority Leader of the House of Representatives Commissioner of Public Health (as Task Force Chair)
Members:	
Joseph Schindler, MD	Speaker of the House of Representatives
Sanjay Mittal, MD	Speaker of the House of Representatives
Pamela Provisor	President Pro Tempore of the Senate
Karen Butterworth	President Pro Tempore of the Senate
David Goldwag, MD	Majority Leader of the Senate
Amre Nouh, MD	Minority Leader of the House of Representatives
Brian Cournoyer	Minority Leader of the Senate
Richard Kamin, MD	Commissioner of Public Health
Mehul Dalal, MD	Commissioner of Public Health
John Quinlavin	Governor
Content Experts*:	
Dawn Beland	Task force Chair
Kristen Hickey	Task force Chair
Karin Nystrom	Task force Chair

II. EXECUTIVE SUMMARY

Stroke is a leading cause of death and disability requiring time-sensitive identification and interventions. An abundance of medical literature demonstrates that stroke patients receive better care, have better outcomes, and have less treatment related complications at centers equipped to treat stroke within the context of a system of care. This Task Force was established pursuant to Public Act 14-214, "An Act Concerning a Task Force to Study Stroke and Reporting on Health Care Associated Infections", with the following charge related to the Stroke Task Force, specifically, "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."

PA 14-214 states that the task force should submit a report on its findings and recommendations to the joint standing committee of the Connecticut General Assembly in accordance with the provisions of section 11-4a of the general statutes. All materials (including agendas, meeting minutes) can be found on the task force's webpage: http://www.ct.gov/dph/cwp/view.asp?a=3127&Q=387372&dphNav=|&dphNav_GID=1827#StrokeTaskForce. The stroke task force convened from June 16, 2015 through January 11, 2016.

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.

III. INTRODUCTION

In Connecticut, stroke and cerebrovascular disease have been one of the top 5 leading causes of death taking the lives of 1258 residents in the year 2012. Stroke is also a leading cause of disability. Time is brain for the individual stroke patient, in whom

approximately 1.9 million neurons die per minute[1]. Early access to treatment interventions aborts brain ischemia, reduces disability, and improves outcomes[2]. Past initiatives operated by the Connecticut Department of Public Health (DPH) have recognized the importance of prevention and time-sensitive treatment interventions for this high acuity patient population exemplified by:

(1) Former DPH Commissioner Galvin's report entitled "Connecticut Comprehensive Plan for Stroke Prevention and Care 2009-13";

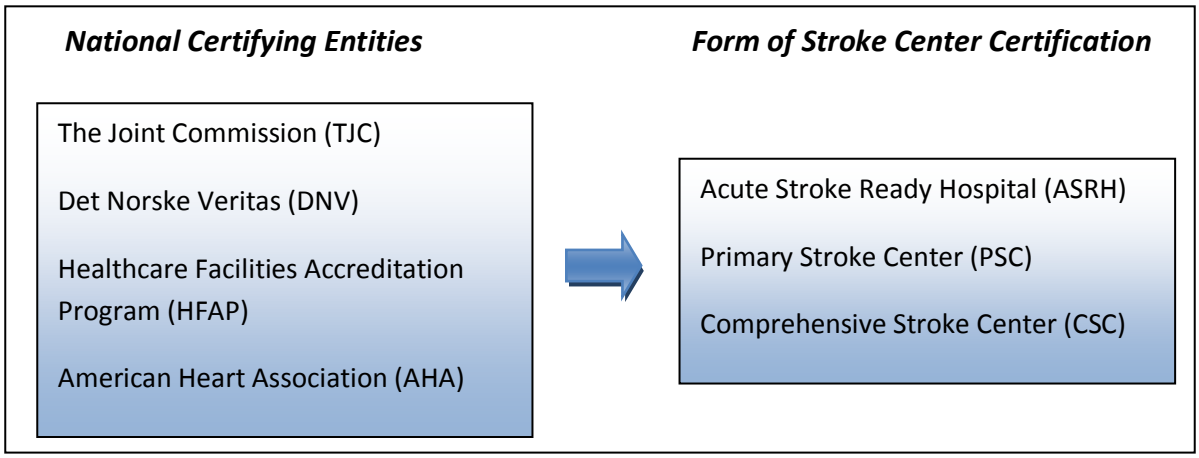
(2) The establishment of the state's Primary Stroke Center Designation Program in 2008.

Commissioner Galvin's report was initiated by the DPH and intended to outline a path for improving Connecticut's system of stroke care. It defined the burden of stroke in Connecticut and underscored the importance for a plan to improve all phases of stroke care[3]. The state Designation program had the over-arching objective of getting patients with symptoms suggestive of stroke as quickly as possible to stroke-certified hospitals where they could receive, if eligible, life-saving interventions to open up intracranial clots causing neurological deficits (ie- paralysis of arms/legs, inability to speak, inability to see, comatose state, etc).

However, the Designation program was retired effective December 31, 2013 due to renewed and clear guidance from the federal Centers for Disease Control and Prevention (CDC), that the Heart Disease and Stroke Prevention funding line awarded to Connecticut supported work exclusively on prevention and risk factor control[4]. Up to this time there were 23 state designated stroke centers in Connecticut—10 of which were not certified by another entity, such as The Joint Commission (TJC)[5]. At this time, Connecticut does not have legislation or other non-legislative policy stipulating that stroke patients be brought to certified stroke centers. In the upshot of the Designation program's discontinuation, a grass-roots effort[6] was coordinated consisting of content experts contributing to the current task force. Investigation in December, 2013 revealed a significant deficiency in the number of stroke centers in Connecticut: of 34 hospitals or satellite Emergency Department (a 24-hour ED affiliated with a remote hub hospital) only 17 were certified as stroke centers (16 by TJC, 1 by the Healthcare Facilities Accreditation Program, See APPENDIX Figure 1). Furthermore, there have been reported cases of "missed opportunities for treatment interventions" when patients presented initially to non-certified hospitals/Emergency Departments (EDs)[6]. This local example exemplifies the broader understanding that significant regional variations exist in Connecticut in the delivery of healthcare and treatment interventions to stroke patients[7,8]. From the above cited grass-roots effort it was identified that there are regions of the state where Connecticut residents may not have rapid access to a certified stroke center (See APPENDIX Figure 2).

A "Stroke Systems of Care Model" (SSCM) aims to enhance care in all phases of stroke management while reducing variability. An abundance of medical literature demonstrates that stroke patients receive better care, have better outcomes, and have fewer treatment related complications at centers equipped to treat stroke within the context of a SSCM[9-11]. Central to this, SSCM hospitals may become certified as a stroke center either by a state DPH or national entities such as TJC, the Healthcare Facilities Accreditation Program (HFAP), the American Heart Association (AHA), or the Det Norske Veritas (DNV) program. Centers may be certified as either Comprehensive Stroke Centers (CSC), Primary Stroke Centers (PSC), or as Acute Stroke Ready Hospitals (ASRH) or centers. Across this spectrum ASRHs at minimum are capable of emergently treating eligible stroke patients with intravenous tPA (clot buster medicine). CSCs are capable of all the functions of ASRHs/PSCs but also are equipped to provide higher level time-sensitive interventions, including neurosurgical procedures.

Figure 1: National Organizations Certifying Stroke Centers



Stroke center certification and the receipt of performance achievement awards are associated with higher hospital level performance[9]. Additionally, stroke patients treated at PSCs are more likely to receive the acute intervention of thrombolytic therapy than patients at non-PSCs[10]. This suggests more efficacious pre-hospital and acute phase care in systems with certified centers[10]. It has also been demonstrated that state stroke public policy also plays an integral role and is an intervention which can increase the number of certified centers in a region[12]. Thus, it appears that state public policy is associated with more hospitals in that state attaining stroke center certification, which appears in turn to be associated with hospitals having higher rates of performance to improve patient outcomes. Additionally, within our region several neighboring states have established fairly robust policies promoting stroke systems of care: Massachusetts and New York have maintained State Health Department stroke center Designation

programs for more than a decade, New Jersey since 2008, and Rhode Island requires stroke centers to be certified by TJC or another national entity[5].

Each of these points underscore the reason why organizations like the American Heart Association/American Stroke Association, the NorthEast Cerebrovascular Consortium, the American College of Emergency Physicians and other organizations highly recommend acute interventions for stroke be done in the context of a "system of care". These organizations advocate for stroke center certification to ensure that treatment protocols at the local hospital level are compliant with existing national guidelines, that key benchmarks in the treatment of acute stroke are being met, and that there is continuing education for providers (physicians and nurses) managing stroke patients so they can be up-to-date in their knowledge of managing the numerous complexities in the acute phase of care.

Pursuant to PA 14-214, the purpose of this report is to make analyses and recommendations aimed at improving care for the individual stroke patient in the context of the retiring of the state's stroke Designation program. The remainder of this report will discuss the overarching objectives identified by the task force and specifically address the task areas posed in the Act. Specific recommendations include:

1. *To create a Connecticut Stroke Steering Committee to further evaluate stroke systems of care in Connecticut.*
2. *To enable state-wide stroke systems providing equal access to care where ideally every hospital in Connecticut becomes equipped to implement a SSCM.*
3. *To have Connecticut mandate stroke systems of care similar to its neighboring states, through law and regulation.*
4. *To report the task forces analyses' and recommendations of each of the 4 task areas cited in the Act pertaining to utilization of a nationally recognized stroke assessment tool, establishment of EMS care protocols, a plan for continuous quality improvement in the system for stroke response, and the feasibility of maintaining a state-wide Designation program administered by the DPH.*

IV. AN OVERARCHING RECOMMENDATION: THE CREATION OF A STATE OF CONNECTICUT STROKE STEERING COMMITTEE

Task Force Recommendation: To create a long-term Connecticut Stroke Steering Committee to further evaluate and make recommendations to the Commissioner of Public Health regarding stroke systems of care in Connecticut.

Background:

Stroke Steering Committees are available in several states and ongoing task force initiatives and quality improvement projects have been completed by their members (e.g. New Jersey, Rhode Island, Massachusetts, New York, Iowa) [11, 13, 14]. Such task forces or steering committees envision that all citizens receive standardized, timely, and

appropriate stroke prevention, treatment and rehabilitation through the provision of education, evidence-based recommendations, and policy development. They serve to guide and facilitate the development of collaborative and inclusive stroke systems of care with the objective of producing measurable improvements in patient outcomes. Such measures and outcomes may be tracked by the establishment of a state-wide stroke registry which provides the foundation for state-wide continuous quality improvement initiatives based on data[11].

Task Force Analysis and Recommended Action Steps:

1. A Connecticut Stroke Steering Committee, consisting of a group of state experts across the spectrum of stroke care, should be created with appointments from the Commissioner of Public Health or his/her designee. Members of the Steering Committee would include but not be limited to representatives from hospital Emergency Departments (emergency medicine physicians), neurologists, stroke coordinators, nurses, emergency medical service providers, volunteers, representation from the Department of Public Health, rehabilitation therapy specialists or others, such as representation from the Department of Aging, as deemed appropriate by the Commissioner of Public Health.
2. The Committee will work in conjunction with the Commissioner of Public Health or his/her designees to make recommendations to strengthen state-wide stroke systems of care based on nationally recognized guidelines for “best practice” patient care.
3. The Connecticut Stroke Steering Committee should work in consort with DPH to evaluate and analyze stroke related disparities in care across the state, set priorities to focus efforts and resources for quality improvement, facilitate quality improvement initiatives, and act as a resource for guiding the education of healthcare professionals and the community on matters of stroke care in the state.
4. The Committee should work to define the quality measures for all phases of stroke care.
5. In conjunction with the DPH, the committee will analyze and report on the interpretation of state-wide quality metrics based on the collection of nationally validated data.
6. The Connecticut Stroke Steering Committee should, at minimum annually, submit analyses and recommendations regarding state-wide stroke care to the Commissioner of Public Health. This will allow a statewide evaluation and improvement of the quality of care for stroke patients and promote collaboration between hospitals, health care personnel and other important stakeholders.

7. The Commissioner of Public Health will decide which branches of DPH will be involved and make determinations regarding the utilization of existing resources.

Table 1: Priorities For Continuing the Work of the Established Stroke Task Force

- **The creation of a 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 in accordance with nationally recognized standards.**
- **To have the Connecticut Stroke Steering Committee in conjunction with the Department of Public Health establish priorities and work to implement procedures for state-wide continuous quality improvement initiatives in all phases of stroke care.**

V. A REVIEW OF TASK AREA 1

Task: A review of "the feasibility of adopting a nationally recognized stroke assessment tool"

Background

Use of a nationally recognized stroke assessment tool has already been adopted informally as a standard of care in Connecticut. A member of this Stroke Task Force undertook a survey of CT hospital EMS Clinical Coordinators. All but one respondent indicated the Cincinnati Stroke Scale was the tool presently in use. The single outlier utilizes the Los Angeles Pre-hospital Stroke Scale. Importantly, the five physician representatives to the Connecticut EMS Medical Advisory Committee (CEMSMAC) have all agreed to utilize the Cincinnati Stroke Scale as the unified stroke assessment tool for EMS personnel. This has been included in the proposed Statewide EMS Protocols currently pending final approval at the time of this report at the CEMSMAC. The consistent inclusion and utilization of a unified pre-hospital stroke assessment tool will improve the early identification of patients with suspected stroke to make patient care and data collection more effective.

Also of importance is the development and expected future validation of stroke severity tools that will not only identify patients with suspected stroke but go further to delineate patients who will need advanced specialty care and promote expeditious delivery of the patient to the most appropriate facility. This is important as research shows that this group of patients with complex strokes may benefit from specific interventions available only at two Connecticut hospitals. Future care may involve directing patients to facilities that can most effectively treat the type of stroke they are more likely suffering from.

Task Force Analysis and Recommended Action Steps

1. Pre-hospital providers should use standard nationally recognized pre-hospital stroke assessment tools as authorized by the Commissioner of the Department of Public Health—based upon the recommendation of the CT EMS Advisory Board with its Medical Advisory Committee as the principle committee of review and recommendation, and including the input of the proposed Connecticut Stroke Steering Committee, as outlined above.
2. Pre-hospital providers should notify the receiving hospital as soon as possible that a patient with suspected stroke is en route in order to marshal needed resources and expedite care.
3. Pre-hospital providers should verbally report their pre-hospital assessment and pre-hospital stroke scale findings to receiving hospital Emergency Department providers and/or stroke team members upon handoff.
4. Pre-hospital providers should provide a patient care report to the receiving hospital treatment team before leaving the Emergency Department.
5. As nationally validated pre-hospital stroke scales evolve to identify specific stroke populations (i.e. those with complex stokes) the Connecticut Stroke Steering Committee, as outlined in the above section in collaboration with the DPH OEMS and Connecticut EMS Advisory Board (CEMSAB) should be involved in updating recommendations for pre-hospital providers.
6. The state of Connecticut DPH will work towards a process to collect pre-hospital data more effectively so it can be utilized for policy development, continuous quality improvement monitoring and initiatives, and be incorporated into a future statewide stroke registry (discussed below).

Table 2: Priorities Regarding Pre-hospital Stroke Assessment Tools

- **All pre-hospital providers should use a Connecticut endorsed pre-hospital stroke assessment tool for patients with suspected strokes as defined by State of Connecticut EMS guidelines.**
- **Timely pre-arrival notification to receiving facilities.**
- **All pre-hospital providers should report the findings of such pre-hospital assessments to definitive providers at receiving Emergency Departments.**
- **Pre-hospital providers provide documentation of their pre-hospital assessment tools to receiving facilities before leaving the Emergency Department.**
- **A future Connecticut Stroke Steering Committee will make recommendations aimed at further augmenting the pre-hospital assessment tools utilized for suspected stroke patients, and, to provide an ongoing evaluation of the care being provided.**

VI. A REVIEW OF TASK AREA 2

Task: A review of "The establishment of care protocols for emergency medical service organizations relating to the assessment, treatment and transport of persons with stroke"

Background

Stroke care, like trauma and myocardial infarction, is a time sensitive clinical issue. The reality is that aside from identifying the patient with suspected stroke there is little more pre-hospital that can be done for the patient beyond the timely transport to a hospital that is equipped and prepared to provide stroke care. The use of a validated stroke scale is only one component of the care patients with suspected stroke need. Optimally, care begins with a call for help via 911. The clock starts with this call to 911 and there is an opportunity to have the emergency dispatchers obtain essential information pertaining to the emergency but also dispatch EMS providers to the patient side in a manner that will minimize arrival and transport times for the patient. Once the provider gets to the patient's side they should have access to and familiarity with a protocol that guides their care to most efficiently identify a suspected stroke and make destination decisions based on patient need.

The current EMS system in Connecticut relies on the local Sponsor Hospital to set and oversee the clinical protocols that are used by EMS providers. In Connecticut there are 5 EMS regions with local Sponsor Hospital's providing education and oversight to the EMS system within those regions. There is unfortunate inconsistency in the way pre-hospital medicine is practiced across the palate of our 31 Connecticut hospitals (not to mention the hospitals of bordering states). This heterogeneity will lessen as we move towards the development and use of a Statewide EMS Protocol. The proposed protocol (see below Figure 1) will help make the pre-hospital evaluation of suspected stroke more consistent and will expectedly lead to a more efficient process for care. Additionally, as our Statewide Protocols are being created in conjunction with the other New England State's EMS Officials, we will be creating not only a more homogeneous practice in Connecticut but in New England as a whole.

Task Force Analysis and Recommended Action Steps

1. 911 Tele-communicators should be trained to make stroke a priority dispatch when appropriate and transport times should be minimized. Dispatch guidelines should be created in conjunction with a medical director.
2. EMS personnel should begin the management of stroke patients in the field with the utilization and consultation of nationally recognized stroke guidelines, developed in conjunction with the Connecticut EMS Advisory Board (CEMSAB) with its Medical Advisory Committee (CEMSMAC) as the principle committee of

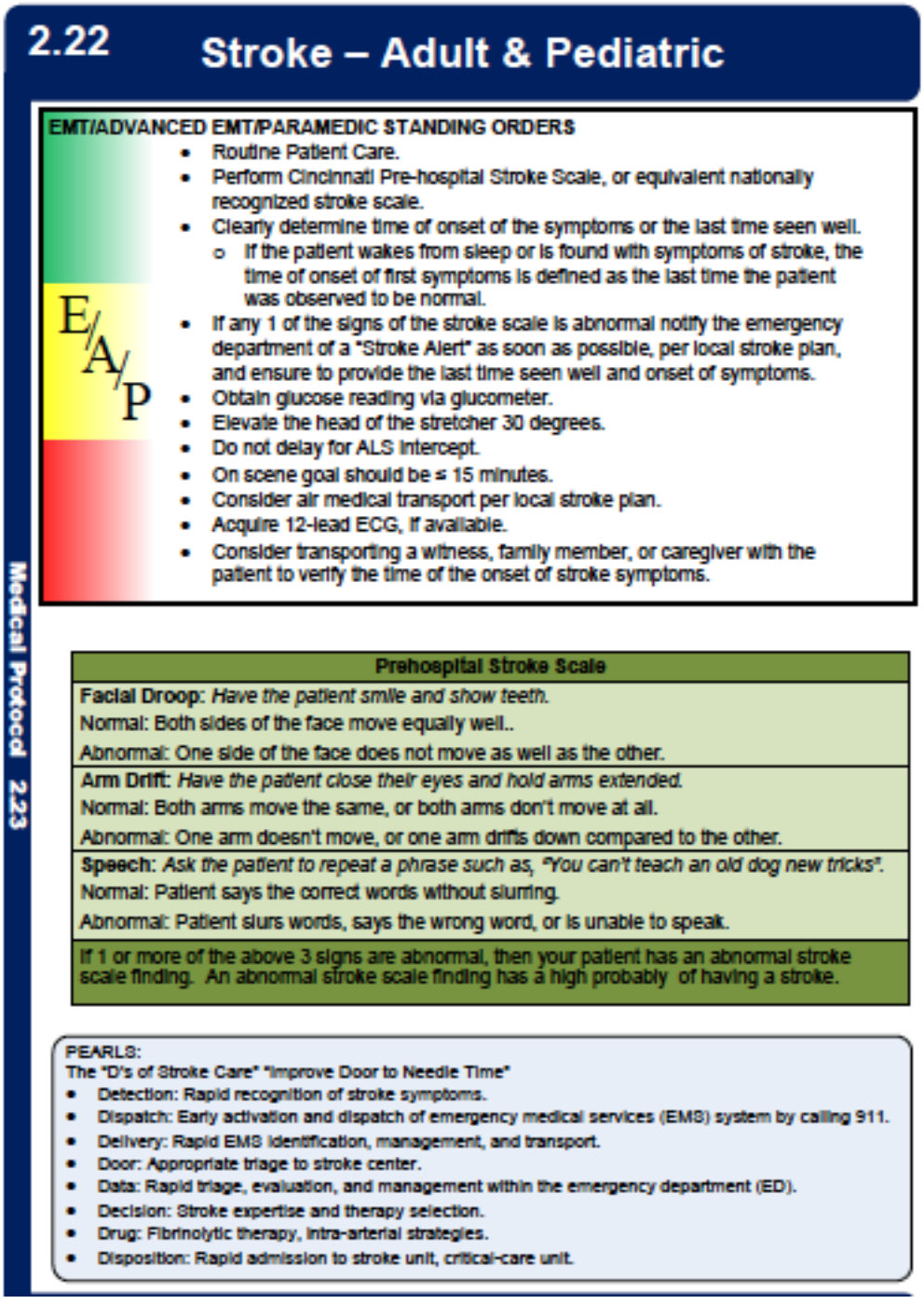
review and recommendation, the Connecticut Stroke Steering Committee, and approved by the Commissioner of the Department of Public Health.

3. Patients should be transported to the nearest acute care facility that can effectively provide a standard of care commensurate with the needs of suspected stroke patients. This should be done in a manner that most effectively minimizes out of hospital time while getting the patient to a facility capable of providing such care as designated by DPH.
4. Pre-hospital data collection should be improved so that quality assurance and improvement programs for stroke care can be effectively included as a component of pre-hospital medical oversight.

Table 3: Priorities Regarding the Establishment of EMS Care Protocols

- **The CT DPH will provide a list of all nationally certified stroke centers capable of providing acute stroke care to each EMS organization and also post such a list on its internet website. Such list may include certified stroke centers in the states of RI, NY, and MA.**
- **Local/regional EMS systems should work their Sponsor Hospital to ensure that all patients with suspected stroke are expeditiously directed to a facility capable of appropriately treating stroke.**
- **Work with the DPH Office of EMS and Regional EMS leaders to create, in conjunction with the Connecticut EMS Advisory Board (CEMSAB) with its Medical Advisory Committee (CEMSMAC) as the principle committee of review and recommendation, and the Connecticut Stroke Steering Committee, uniform pre-hospital stroke protocols.**
- **Empower the Connecticut Stroke Steering Committee in conjunction with the CT EMS Medical Advisory Board with its Medical Advisory Committee under the auspices of the Commissioner of the Department of Public Health to further refine pre-hospital protocols and recommendations as current literature and national guidelines evolve.**

Figure 2: Proposed Pre-Hospital Stroke Assessment Tool (Draft of Connecticut statewide EMS protocol).



2.22 Stroke – Adult & Pediatric

Medical Protocol 2.23

EMT/ADVANCED EMT/PARAMEDIC STANDING ORDERS

E/A/P

- Routine Patient Care.
- Perform Cincinnati Pre-hospital Stroke Scale, or equivalent nationally recognized stroke scale.
- Clearly determine time of onset of the symptoms or the last time seen well.
  - If the patient wakes from sleep or is found with symptoms of stroke, the time of onset of first symptoms is defined as the last time the patient was observed to be normal.
- If any 1 of the signs of the stroke scale is abnormal notify the emergency department of a "Stroke Alert" as soon as possible, per local stroke plan, and ensure to provide the last time seen well and onset of symptoms.
- Obtain glucose reading via glucometer.
- Elevate the head of the stretcher 30 degrees.
- Do not delay for ALS intercept.
- On scene goal should be ≤ 15 minutes.
- Consider air medical transport per local stroke plan.
- Acquire 12-lead ECG, if available.
- Consider transporting a witness, family member, or caregiver with the patient to verify the time of the onset of stroke symptoms.

Prehospital Stroke Scale
Facial Droop: *Have the patient smile and show teeth.*
Normal: Both sides of the face move equally well..
Abnormal: One side of the face does not move as well as the other.
Arm Drift: *Have the patient close their eyes and hold arms extended.*
Normal: Both arms move the same, or both arms don't move at all.
Abnormal: One arm doesn't move, or one arm drifts down compared to the other.
Speech: *Ask the patient to repeat a phrase such as, "You can't teach an old dog new tricks".*
Normal: Patient says the correct words without slurring.
Abnormal: Patient slurs words, says the wrong word, or is unable to speak.
If 1 or more of the above 3 signs are abnormal, then your patient has an abnormal stroke scale finding. An abnormal stroke scale finding has a high probably of having a stroke.

PEARLS:
The "D's of Stroke Care" "Improve Door to Needle Time"

- Detection: Rapid recognition of stroke symptoms.
- Dispatch: Early activation and dispatch of emergency medical services (EMS) system by calling 911.
- Delivery: Rapid EMS identification, management, and transport.
- Door: Appropriate triage to stroke center.
- Data: Rapid triage, evaluation, and management within the emergency department (ED).
- Decision: Stroke expertise and therapy selection.
- Drug: Fibrinolytic therapy, intra-arterial strategies.
- Disposition: Rapid admission to stroke unit, critical-care unit.

VII. A REVIEW OF TASK AREA 3

Task: A review of "The establishment of a plan to achieve continuous quality improvement in the care provided to persons with stroke and the system for stroke response."

Background

"Geography is Destiny" is an existing paradigm in healthcare[15,16] suggesting that unexplained regional differences in healthcare occur which can influence outcomes. This variability isn't necessarily explained by demographic or epidemiologic factors, but rather, is a result of differences in the effectiveness and efficiency of health care delivery systems. Quality improvement initiatives aim to enhance the delivery of care with a central tenant being the quantitative tracking of measurable benchmarks, process measures, and clinical outcomes. In stroke specifically, established quality measures have been published by the AHA[17-19] with adherence being associated with improved outcomes. For example, hospital pre-notification by EMS has been associated with faster in-hospital stroke response and evaluation[20,21], shorter door to needle times and increased likelihood of tPA utilization (Abdullah et al., 2008; McKinney et al., 2013).

For background information, national certifying entities (ie- TJC, AHA, HFAP, DNV) require that hospitals certified as stroke centers or stroke ready have a hospital-based registry to track clinical benchmarks, outcomes, and complications. There are several data platforms available (ie- Get-With-The-Guidelines-Stroke by the AHA, aka-GWTG-S; Premier, Truven, etc). GWTG-S has a "super-user" function which is utilized by other state's DPHs to centralize hospital data (Cost roughly $1989 annually)[22]. Per a recent State of Connecticut Stroke Coordinators Survey and correspondence with staff at the AHA, 17 hospitals in the state use GWTG-S or databases that are compatible with GWTG-S (ie- Quantros, Premier). Only one stroke center in the state utilizes a registry not compatible with GWTG-S (Truven), but have expressed a willingness to convert if a state registry is created.

Several states in the northeast (ie- NY, MA, NJ) have established standardized data collection and reporting methodologies and created state stroke registries. Specifically, Massachusetts utilization of the GWTG-S super-user platform allows DPH staff to run real time compliance reports among all hospitals participating in GWTG-S. Information is publicly reported. New York requires a competitive bid process so GWTG-S is not the default state registry. However, hospitals have very specific data requirements such that the majority uses GWTG-S. Hospitals also report on the 8 TJC consensus measures.

Metrics of in-hospital stroke care can be categorized as *core, process, and quality related*. A reasonable first approach would be to collect and analyze core metrics, as these are most consistent amongst certified stroke centers. These eight Joint

commission core measures are aligned with the Centers for Medicare & Medicaid Services and harmonized with data elements contained in the GWTG-S patient management tool and the Centers for Disease Control and Prevention (CDC) Paul Coverdell National Acute Stroke Registry. These Metrics are recommended for hospitals to submit to the Connecticut Stroke Steering Committee in conjunction with the DPH for quality improvement. Interventions to improve these metrics will allow collaboration amongst hospitals out of their respective healthcare systems to promote the best level of care to stroke patients. As the Connecticut Stroke Steering Committee develops, further future metrics, including but not limited to inter-hospital transfers, post-hospital phases of care including rehabilitation service and secondary prevention would commence as other stakeholders are engaged to ensure optimal system performance in all phases and transitions of care.

Task Force Analysis and Recommended Action Steps

1. To create a Connecticut Stroke Steering Committee, as specified in Section IV, Recommendation 1, which will offer recommendations to improve state-wide stroke systems of care.
2. To work towards creating a statewide stroke registry which can track trends in quality measures, benchmarks, and clinical outcomes—and supports regional and hospital level quality improvement. This Task Force recognizes that additional DPH resources beyond the scope of this report would be necessary to implement a robust state-wide continuous quality improvement program similar to other neighboring states with stroke registry data. Sequential objectives include, but are not limited to the following:
    a. To identify the DPH resources and support necessary to establish a process by which the Connecticut Stroke Steering Committee in conjunction with DPH representatives can collect and analyze stroke metrics from all Connecticut Hospitals.
    b. Centrally gather stroke data currently being collected by hospitals in Connecticut. Such data includes, but is not limited to the 8 stroke core measures tracked by TJC—which is endorsed and/or aligned with other national entities (ie- National Quality Forum, CMS, American Stroke Association).
    c. Provide preliminary state-wide data to the Connecticut Stroke Steering Committee and DPH to track quality measures and to facilitate decisions regarding a more comprehensive state-wide data registry.

d. The Connecticut Stroke Steering Committee should recommend a nationally recognized data platform to use as a state registry. DPH may enter into a partnership with the entity sponsoring such a data platform.
e. The Connecticut Stroke Steering Committee and DPH should endorse a process by which certified stroke centers and emergency medical service organizations report data on the treatment of persons with stroke. A partnership between the DPH and a national entity, such as the American Stroke Association, facilitating the reporting and analysis of data merits consideration.
f. The Connecticut Stroke Steering Committee and DPH should perform ongoing analysis of registry data to inform decisions aimed at improving local and regional stroke systems of care in Connecticut. Maintenance of data should be in a secure database and consist of stroke metrics in accordance with established guidelines. The data described in this section should not contain patient-identifiable information.

3. Over time it is also envisioned that the DPH and Connecticut Stroke Steering Committee will have activities including, but not limited to the following: (1) provide assistance for the sharing of information and data among healthcare providers relating to stroke; (2) facilitate communication among, and the analysis of health information and data by, healthcare professionals providing care for persons with stroke; (3) promote that evidence-based treatment guidelines are followed in transitioning persons with stroke to outpatient care following discharge from a hospital for acute treatment for a stroke

Table 4: Priorities Regarding Continuous Quality Improvement Initiatives Related to Stroke Systems of Care

- **Create a Connecticut Stroke Steering Committee which works in conjunction with the Department of Public Health to make system based recommendations aimed at improving stroke care in Connecticut.**
- **Create a state-wide stroke registry forming the basis of continuous quality improvement activities across the spectrum of stroke care.**

VIII. A REVIEW OF TASK AREA 4

Task: A review of "The feasibility and costs of establishing and maintaining a state-wide, hospital stroke Designation program administered by the Department of Public Health.

Background

This section reviews the feasibility and costs of establishing and maintaining a state-wide, hospital stroke Designation program administered by the Department of Public

Health. The task force envisions a Designation system that improves the care delivered to all persons with stroke in Connecticut, is inclusive for all hospitals, while aligning with the overall vision of nationally recognized stroke certification organizations. Stroke certified hospitals are required to comply with a number of standards related to access and availability of appropriate leadership and stroke expertise, written treatment and transfer guidelines and the ability to provide necessary diagnostic testing and interpretation (ie. lab work and Radiology). Stroke Certification is essential because it assures the public and the EMS community that a hospital has the procedures and guidelines in place to ensure persons experiencing stroke symptoms will be rapidly assessed and given the most definitive treatment, or triage, as rapidly as possible. As discussed prior, hospitals with stroke certification and the attainment of performance achievement awards have shown improved patient outcomes[9].

Also briefly discussed above, hospitals can achieve certification by applying to one of several accrediting bodies, for example, TJC, DNV, HFAP, AHA, or some equivalent nationally recognized organization providing stroke center certification. Some national organizations offer tiered certification levels which are dependent on the level of care a hospital is able to provide to persons with stroke. CSC certification is the highest tier and is available to hospitals that provide advanced medical and surgical stroke care. PSC certification is available to hospitals that provide advanced medical and some basic surgical care. ASRH certification is available to sites who provide basic emergent stroke care to their patients, and often work in conjunction with other PSC's or CSC's to provide advanced stroke care if needed. Each certification tier ensures that stroke care is provided to patients in a safe and rapid manner.

Some states, like Massachusetts, have developed and implemented a state-designed and state-administered stroke Designation program. According to a 2011 CDC report, of the 18 states with enacted primary stroke center legislation or non-legislative policy as of July 2010, "three states accept The Joint Commission accreditation outright as the sole criterion for state Designation as a primary stroke center". The other 15 states have a state-based process for primary stroke center criteria development and Designation, often combining the state-based authority with The Joint Commission or Brain Attack Coalition standards or accepting The Joint Commission accreditation in addition to state-based criteria. In most of these cases, the legislation or administrative policy gave a state agency, typically the state's department of health or EMS, the authority to develop Designation criteria[23].

As discussed the Connecticut stroke Designation program was in operation from 2008 to 2013. Shifting agency and funder priorities for the Heart Disease and Stroke Prevention Program, curtailed DPH's ability to assign staff to stroke Designation and the program was retired in December 2013. CDC being the primary funder for the CT Heart

Disease and Stroke Prevention Program revised expectations so that staff activities were to focus on broad-based primary prevention and risk-factor control strategies to reduce the overall occurrence of stroke. Of states with stroke legislation, only 6 had State DPH Stroke Center Designation programs similar to the prior program implemented by Connecticut (MA, NJ, NY, FL, MD, OK). The majority of certified stroke centers (CSC, PSC, or ASRH) in the United States are certified by the before mentioned national certifying organizations, with TJC certifying the majority. The State of Rhode Island recently submitted to its General Assembly the "Stroke Prevention and Treatment Act of 2009" which empowers the director of the DPH to "establish a process to recognize comprehensive and primary stroke centers" and states "A hospital should be designated as a 'Rhode Island CSC' or 'Rhode Island PSC' if it has received a certificate of distinction…issued by the Joint Commission…or other nationally recognized certification body…"[24]. Over the past 2-3 years there have been several stroke legislation publications[9-12] and the passage of additional state legislation similar to the Rhode Island Act is anticipated.

Task Force Analysis and Recommended Action Steps

1. The task force recommends the following DPH role with respect to administering a hospital stroke Designation
    a. For sites aiming to provide acute stroke care, the Connecticut Commissioner of Public Health should recognize the third-party stroke center certification of hospitals by nationally recognized entities providing stroke center certification. Certification may be performed by TJC, DNV, HFAP, AHA or some future equivalent entity. Certification may include, but not be limited to, as a Comprehensive Stroke Center, Primary Stroke Center, Acute Stroke Ready Hospital or center, or some future equivalent certification mechanism recognized as providing an analogous standard of care.
    b. Maintain and oversee the official list of hospitals with national stroke certification from entities recognized by the Connecticut DPH. Such a list will also name each hospital's stroke coordinator, stroke director or persons in equivalent roles. The preceding information will be updated annually or when there is a change in a hospital's certification status. Hospitals will be required to report any change in status to DPH within one month of change in certification status.
    c. Publish the information outlined in "b" online on DPHs public website and distribute it actively to Connecticut EMS providers.

d. In order to aid smaller hospitals and those in the start-up phase of considering stroke center certification—the DPH will provide and publish on its website a resource list of standards, guidelines, and written care protocols for the treatment of ischemic and hemorrhagic stroke patients, including transfer of such patients to a certified stroke center, as appropriate. Such materials will be intended for educational purposes and would be developed and/or vetted by the Connecticut Stroke Steering Committee and based on evidence and current best practices.
e. Work in close coordination with the proposed Connecticut Stroke Steering Committee which would serve as the working body to achieve the above mentioned initiatives

2. Cost and Feasibility Analysis
    a. It is estimated that the above functions for task area 4 can be carried out in full by a 0.5 FTE Health Program Assistant 2, operating under the supervision of a senior clinical staff (e.g Nurse Consultant, Supervising Nurse Consultant, Physician). Assuming the supervision is given in kind by existing DPH staff, the annual salary cost to support the proposed program annually would be $31,263.
    b. These costs are outside the existing DPH budget and resources and would therefore require additional appropriations. Further, as an executive agency, DPH cannot support proposals with state fiscal impact that lie beyond the scope of the Governor's budget. As such it should be noted that the cost estimate given above is for informational purposes only and does not constitute endorsement, support or commitment by DPH.
    c. An additional important feasibility concern is that the envisioned Designation program is misaligned with the existing priorities and federal funding portfolio of the DPH Heart Disease and Stroke Prevention Program which focuses on the prevention and control of stroke risk factors (e.g reduction of high blood pressure, reducing sodium intake). Focus on prevention activities is a requirement of the funder (Centers for Disease Control and Prevention) and aims importantly to reduce the overall occurrence of stroke in the State. There are no existing initiatives pertaining to the clinical management of acute stroke or related acute conditions (heart attack, heart failure) in the Heart Disease Stroke Prevention program.

d. The above realities necessitate the provision of resources, staffing, and support to enable the creation of the proposed DPH administered hospital stroke Designation program. This Stroke Task Force believes such support merits strong consideration for the sustenance of the above recommendations which are aimed at providing each Connecticut citizen equal and rapid access to the most up-to-date stroke therapies and interventions within the context of a state-wide system of care.

Table 5: Priorities Regarding the Establishment and Maintenance of a State-wide Hospital Stroke Designation Program Administered by the DPH

- **The Department of Public Health with the aid of the Connecticut Stroke Steering Committee should establish, and periodically review, a process for establishing a state-wide stroke system of care by 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.**
- **The Department of Public Health should maintain and oversee the official list of hospitals with national stroke certification from an entity recognized by the Connecticut Department of Public Health, and distribute such a list to EMS providers state-wide.**
- **The Department of Public Health endorsement of certifications should be part of an integrated state-wide stroke system of care overseen in conjunction with the analyses and recommendations of the proposed Connecticut Stroke Steering Committee.**

IX. ACKNOWLEDGEMENTS

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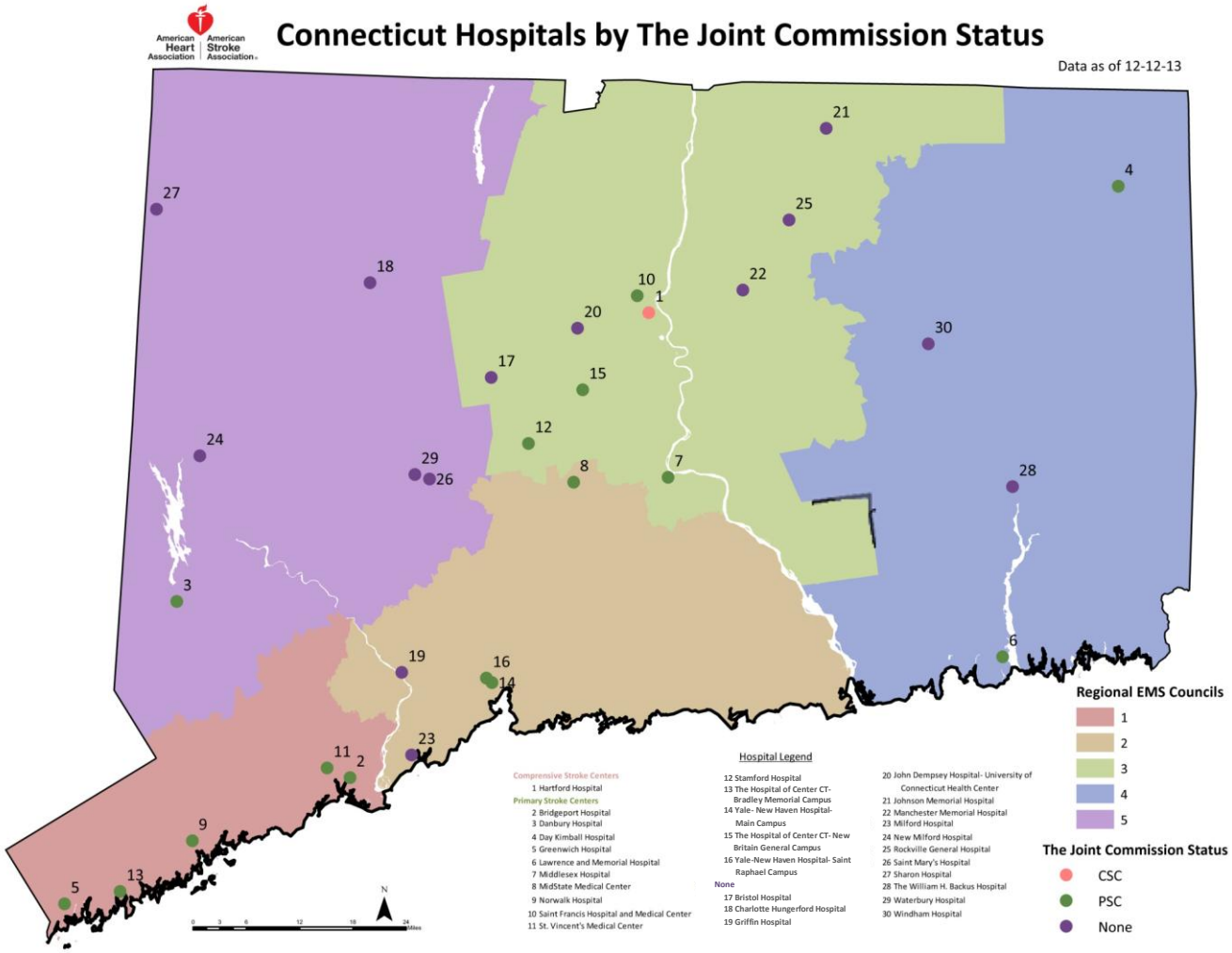
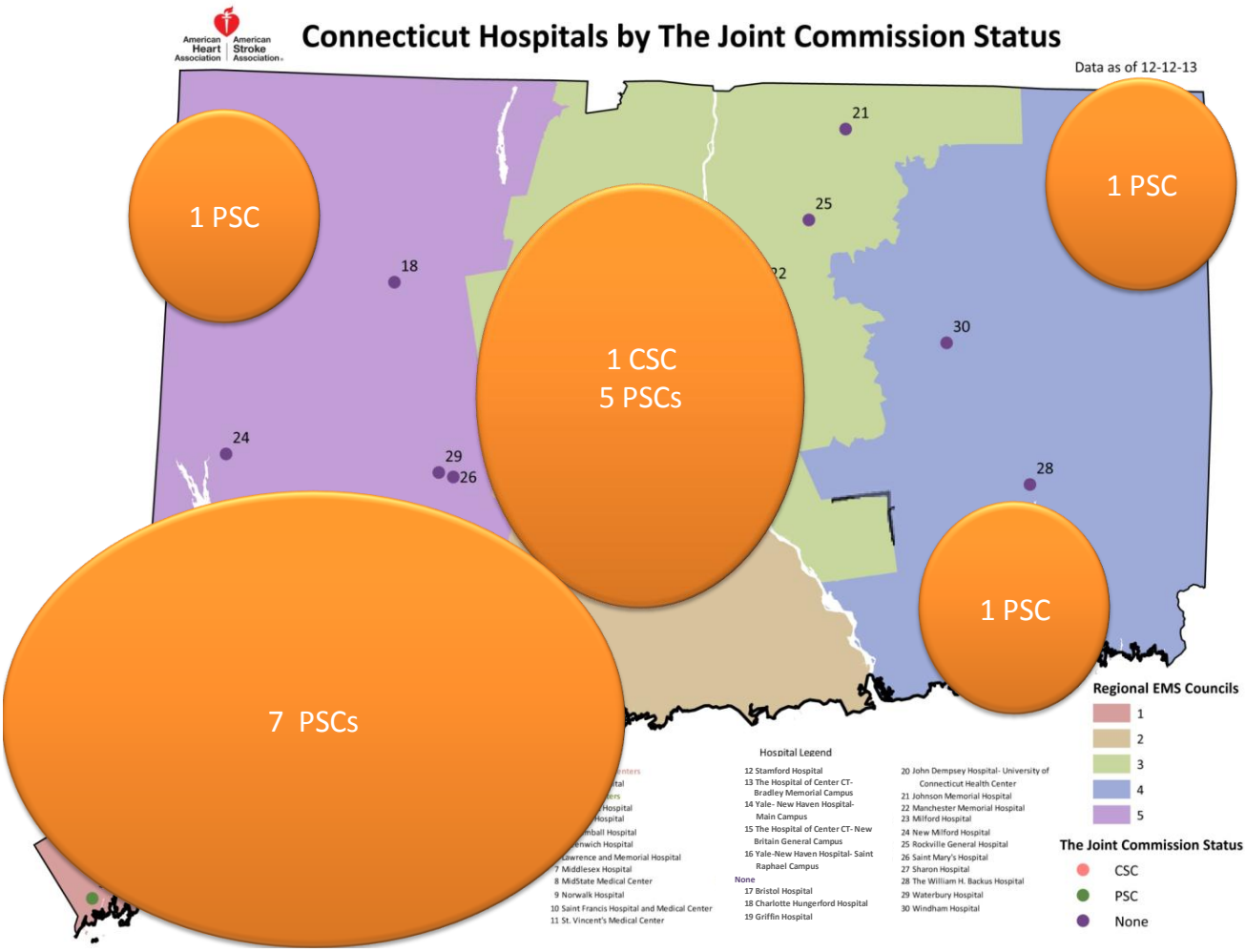
XI. APPENDICES

1. Attendance report for Task Force Meetings (available if requested)
2. Supplemental Figures
3. PA 14-214

1. APPENDIX Figure 1: PSC/CSC Certification of Connecticut Hospitals by the Joint Commission (note, Hospital 27 was certified as a PSC by the HFAP, Data from 12/12/13)



2. **APPENDIX Figure 2: Stroke Center Coverage Gap Areas (Effective 12/12/13; Orange areas signify regions within appropriate radius of a PSC/CSC; non-orange areas signify regions where citizens are at risk for delays in presentation to a stroke center; Number of PSC/CSCs signified in each orange area).**



3. 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.

(c) All appointments to the task force shall be made not later than thirty days after the effective date of this section. Any vacancy shall be filled by the appointing authority. The Commissioner of Public Health, or the commissioner's designee, shall schedule the first meeting of the task force, which shall be held not later than sixty days after the effective date of this section. A majority of the task force members shall constitute a quorum. A majority vote of a quorum shall be required for any official action of the task force.

(d) The Commissioner of Public Health shall select a chairperson of the task force from among the members of the task force.

(e) The administrative staff of the joint standing committee of the General Assembly having cognizance of matters relating to public health shall serve as administrative staff of the task force.

(f) Members shall receive no compensation except for reimbursement for necessary expenses incurred in performing their duties.

(g) Not later than January 15, 2016, the task force shall submit a report on its findings and recommendations to the joint standing committee of the General Assembly having cognizance of matters relating to public health, in accordance with the provisions of section 11-4a of the general statutes. The task force shall terminate on the date that it submits such report or January 15, 2016, whichever is later.

Sec. 2. Section 19a-490o of the general statutes is repealed and the following is substituted in lieu thereof (*Effective October 1, 2014*):

(a) The Department of Public Health shall consider the recommendations of the Advisory Committee on Healthcare Associated Infections established pursuant to section 19a-490n, with respect to the establishment of a mandatory reporting system for healthcare associated infections designed to prevent healthcare associated infections.

(b) The Department of Public Health shall submit a report to the joint standing committee of the General Assembly having cognizance of matters relating to public health concerning the plan for the mandatory reporting system for healthcare associated infections recommended by the Advisory Committee on Healthcare Associated Infections pursuant to section 19a-490n, and the status of such plan implementation, in accordance with the provisions of section 11-4a.

(c) On or before May 1, 2011, and annually thereafter, the department shall submit a report to the joint standing committee of the General Assembly having cognizance of matters relating to public health on the information collected by the department pursuant to the mandatory reporting system for healthcare associated infections established under subsection (a) of this section, in accordance with the provisions of section 11-4a. Such report shall include, for each facility, information reported to the department or the Medicare Hospital Compare program concerning the number and type of infections, including, but not limited to, central line-associated bloodstream infections, catheter-associated urinary tract infections, surgical site infections, methicillin-resistant staphylococcus aureus (MRSA) infections and Clostridium difficile (C. difficile) infections. Such report shall be posted on the department's Internet web site and made available to the public.

(d) The department shall post information on its Internet web site regarding health care-associated infections. Such information shall include clear and easily accessible links on the department's home page to the annual reports submitted in accordance with subsection (c) of this section and to the Medicare Hospital Compare Internet web site to assist members of the public in learning about health care-associated infections and comparing the rate of such infections at facilities in the state.

Approved June 13, 2014