

HAWAII STATE DEPARTMENT OF HEALTH



# Stroke Task Force

---

**Final Report to the 28<sup>th</sup> Legislature**

Senate Concurrent Resolution No. 155 S.D. 1

November 20, 2014

## Table of Contents

Contact Information .....	2
Background .....	3
Hawaii Stroke Mortality .....	3
Stroke Hospitalizations .....	4
Senate Concurrent Resolution No. 155 S.D. 1 .....	5
Status of Progress .....	5
Systems Review .....	5
Task Force .....	5
National Guidelines .....	7
Quality of Care for Stroke Patients .....	7
Hawaii’s Cardiovascular Prevention Plan .....	9
Healthcare Transformation Priorities .....	10
EMS and Hospitals .....	10
Uniform Prehospital Protocol for Assessment of Stroke .....	10
Direct Transportation of Stroke Patients .....	11
Patients at Risk for Stroke are Provided Care at a Stroke Support Facility .....	11
Data .....	12
Data Requirements and Statewide Registry .....	12
Legislation and Funding .....	13
Reporting to Legislature .....	14
Appendix A: Acute Stroke Ready Criteria .....	15
Appendix B: Hospital Attestation Checklist .....	25
Appendix C: Hawaii Stroke Database .....	34

## Contact Information

For more information or questions about this report please contact:

Linda Rosen, M.D., M.P.H.

Director of Health

Chief, Emergency Medical Services and Injury Prevention System Branch

Hawaii State Department of Health

1250 Punchbowl Street

Honolulu, HI 96813

808-733-9210

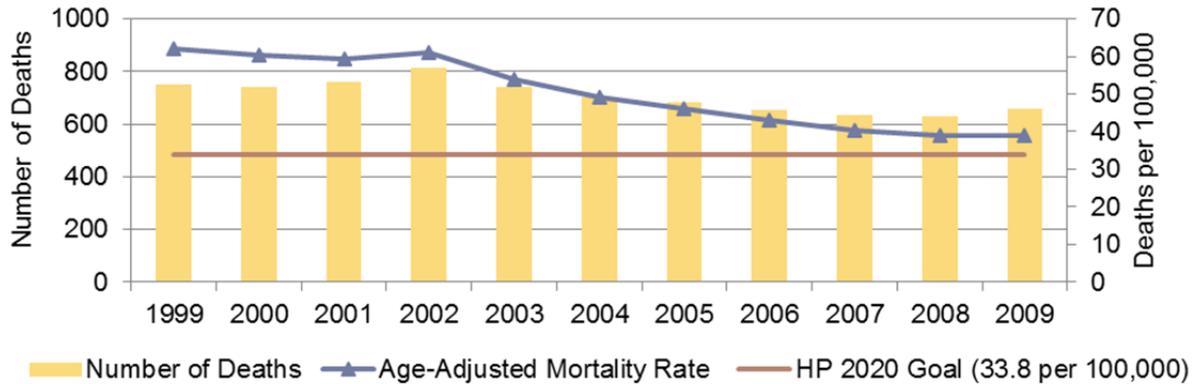
[linda.rosen@doh.hawaii.gov](mailto:linda.rosen@doh.hawaii.gov)

## Background

### Hawaii Stroke Mortality

Each year, stroke is responsible for over 600 deaths in Hawaii. In 2009, strokes caused 6.8% of all deaths. The age-adjusted mortality rate for stroke has been decreasing since 2002 but stroke remains the third leading cause of death in Hawaii.

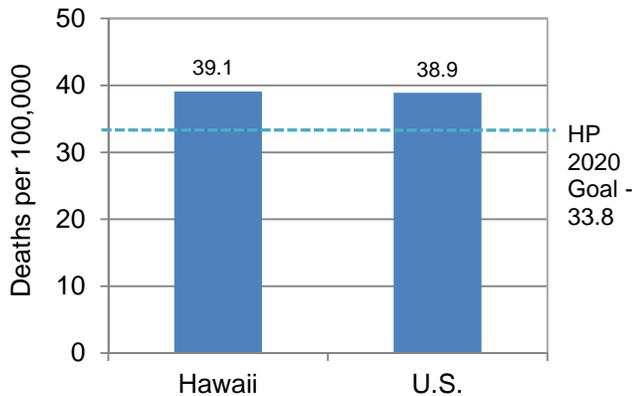
Figure 1: Number of Stroke Deaths and Age-Adjusted Stroke Mortality Rates per 100,000, Hawaii 1999 - 2009



Source: Hawaii State Department of Health Office of Health Status Monitoring  
 Note: Age-adjusted to year 2000 U.S. Standard Population

In 2009, the age-adjusted stroke mortality rate was 39.1 per 100,000 in Hawaii. Hawaii experiences a similar age-adjusted stroke mortality rate compared to the United States, but there is room for improvement to meet the Healthy People 2020 goal of 33.8 deaths per 100,000. The Healthy People 2020 project is a national initiative to improve the health of Americans and eliminate disparities.

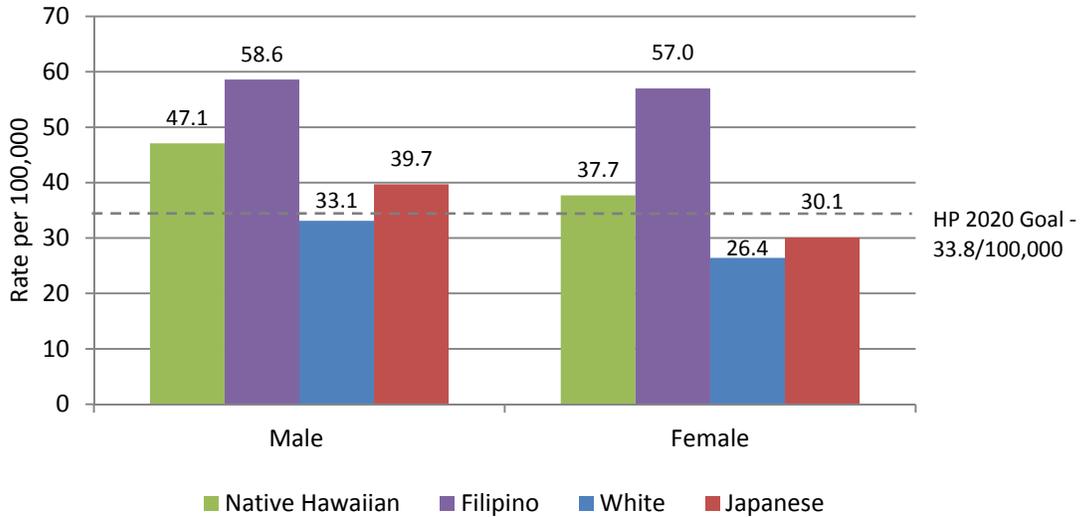
Age-Adjusted Stroke Mortality Rate per 100,000, U.S. and Hawaii 2009



Source: Hawaii State Department of Health Office of Health Status Monitoring and Kochanek KD, Xu JQ, Murphy SL, Minino AM, Hsiang-Ching K. Deaths: Preliminary data for 2009. National vital statistics reports; vol 59 no 4. Hyattsville, MD: National Center for Health Statistics. 2011.  
 Note: Age-adjusted to year 2000 U.S. Standard Population; U.S. data is preliminary but represents 96% of all death records

Native Hawaiians and Filipinos have higher stroke mortality rates than Whites and Japanese. Filipino females have a stroke mortality rate more than double that of Whites or Japanese.

**Stroke Age-adjusted Mortality Rates by Gender and Ethnicity, Hawai'i 2008 -2009**

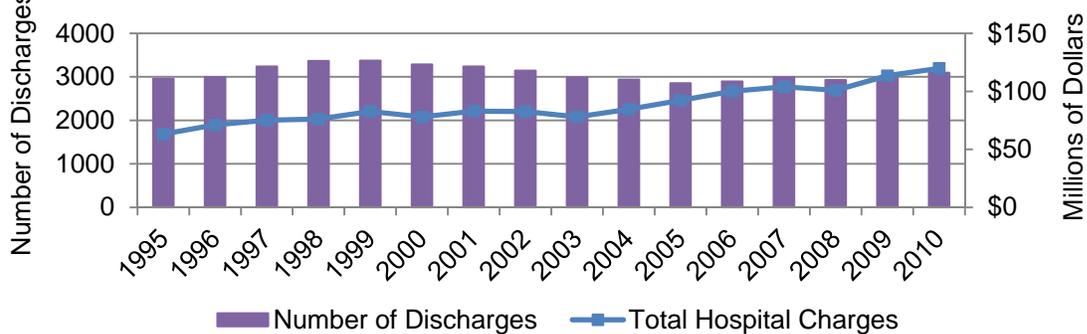


Data Source: Hawai'i State Department of Health Office of Health Status Monitoring  
Age-adjusted to the year 2000 U.S. Standard Population

### Stroke Hospitalizations

In 2010, stroke caused 3,098 inpatient hospital admissions in Hawaii. Of these, 63% were ischemic strokes, 20% were hemorrhagic, and 17% were other or ill-defined stroke. Patients hospitalized for stroke spend an average of 7 days in the hospital. Although the number of hospital discharges with a primary diagnosis of stroke has been decreasing since 1999 followed by a slight increase since 2005, hospital charges have continued to climb. In Hawaii, the average charge per stroke discharge increased from \$21,384 in 1995 to \$38,694 in 2010, an increase of 81%.

**Stroke Hospital Discharges and Hospital Charges (in Millions) in Hawaii, 1995 - 2010**



Source: Hawaii Health Information Corporation

## **Senate Concurrent Resolution No. 155 S.D. 1**

“Be it resolved by the Senate of the Twenty-seventh Legislature of the State of Hawaii, Regular Session 2013, the House of Representatives concurring, that the Department of Health convene a task force to establish a stroke system of care in the State that includes a statewide stroke database and registry by December 31, 2015.”

The Resolution identified organizations and individuals to develop a statewide stroke task force along with specific requests for the task force to address.

An initial report was provided to the Legislature on December 31, 2013. This final report is provided to the 28<sup>th</sup> Legislature to describe the progress of the STF.

### **Status of Progress**

Requests outlined in S.C.R. No. 155 S.D.1 have been categorized into the following section headings for this report:

- Systems Review
- Emergency Medical Services (EMS) and Hospitals
- Data
- Legislation and Funding
- Reporting

Under each section heading is a description of the progress, findings and recommendations of the STF.

### **Systems Review**

#### **Task Force**

“...the Department of Health is urged to convene a task force to establish a stroke system of care in the state that includes a statewide stroke database and registry by December 31, 2015.”

Linda Rosen, MD, MPH, Chief of the EMS and Injury Prevention System Branch and Director of Health (March 2014 to present) led the effort to convene and facilitate a monthly statewide stroke task force.

#### **Task Force Members**

“...membership of the task force comprise government, non-profit, and private health care entities and include the following individuals:...”

Recruitment of members for the STF began in August 2013 and included stakeholders from government, non-profit, and private healthcare entities. All entities and individuals identified in the Resolution were successfully recruited. Gaps in member representation were identified and recommendations were made by the STF to invite additional organizations not listed in the

Resolution. At this time thirty-eight (38) unique organizations are represented on the STF. Many of the member organizations have more than one individual participating in the monthly meetings.

A list of individuals and organizations in attendance at each meeting is included in the meeting notes and are available upon request from the Department of Health EMS and Injury and Prevention System Branch.

<b>Hawaii Stroke Task Force Member Organizations</b>		
American Heart Association/American Stroke Association	American College of Emergency Physicians	Castle Medical Center
Hale Hoola Hamakua	Hawaii EMS Medical Director	Hawaii Health Systems Corporation
Hawaii Neurological Society	Hawaii Pacific Health	Hawaii State Department of Health
Healthcare Association of Hawaii	Hilo Medical Center	Kahuku Medical Center
Kaiser Permanente, Moanalua Medical Center	Kau Hospital	Kauai EMS Medical Director
Kapiolani Medical Center for Women and Children	Kauai Veterans Memorial Hospital	Kohala Hospital
Kona Community Hospital	Kuakini Medical Center	Kula Hospital
Lanai Community Hospital	Legislature, House	Legislature, Senate
Maui EMS Medical Director	Maui Memorial Medical Center	Molokai General Hospital
Neurotrauma Advisory Board, DOH, Developmental Disabilities Branch	North Hawaii Community Hospital	Pali Momi Medical Center
Queens Medical Center	Samuel Mahelona Memorial Hospital	Society for Hospital Medicine, Hawaii Chapter
Rehabilitation Hospital of the Pacific	Straub Clinic and Hospital	Tripler Army Medical Center
Wahiawa General Hospital	Waianae Coast Comprehensive Health Center	Wilcox Memorial Hospital

### **Task Force Meetings**

STF meetings were held monthly at the Healthcare Association of Hawaii (HAH) office located in Honolulu. In-kind support from the American Heart Association (AHA) and HAH greatly contributed to the success of the STF by providing essential logistical support for meeting space and conference call-in lines for members unable to attend in-person. Meetings were scheduled for 1.5 hours the first Tuesday of each month. A total of 13 meetings were convened from September 2013 – November 2014.

Meeting notes were compiled to summarize the discussions and decisions. Meeting notes were distributed to members to review and opportunities to make corrections were provided prior to STF approval. Meeting notes are available upon request from the DOH EMS and Injury and Prevention System Branch.

The STF recommended that the group continue to meet for the purpose of improving the stroke system of care beyond the legislatively requested time period.

### **National Guidelines**

“Review and assess national models, best practices, guidelines and standards of stroke care, comparative to Hawaii’s needs;”

The STF utilized the most current evidence-based information available to make decisions to improve the current stroke system of care in the state. Using the *Formation and Function of Acute Stroke-Ready Hospitals within a Stroke System of Care – Recommendations from the Brain Attack Coalition* published December 2013, the STF identified essential and desired criteria for an Acute Stroke-Ready Hospital in Hawaii.

### **Quality of Care for Stroke Patients**

“Examine and identify barriers to quality care for stroke patients;”

Surveys assessing the capabilities and barriers within the stroke system of care were conducted with hospitals and EMS.

An EMS self-report capability survey was completed October 2013; all four (4) county EMS agencies responded. Areas for improvement were identified including the need for standardized prehospital stroke scale reporting, stroke scale training and communication protocols.

Two county 9-1-1 ambulance services were using a formal standardized prehospital stroke scale for potential stroke patients.
--

All four counties received training in using at least one of the standardized prehospital stroke scales.
--

Two county 9-1-1 ambulance services have agreements on stroke activation with hospitals.
--

A hospital self-report capability survey was completed in October 2013. All fourteen (14) acute care hospitals with computerized axial tomography (CT) scan capability responded. Barriers and areas for improvement were identified:

28.6% of hospitals stated they do not have written emergency department activation/care pathway for suspected acute stroke “stroke code.”
---

21.4% of hospitals stated they do not have specific positions/individuals identified as their “stroke team” to be alerted for a likely acute stroke situation.
--

50% of hospitals indicated they do not have a written protocol describing when the “stroke code” can be initiated and by whom.
--

7.1% of hospitals stated they do not use the National Institutes of Health Stroke Scale to assess potential stroke patients.
7.1% of hospitals stated they do not use a specific order set for suspected acute stroke patients.
14.3% of hospitals stated they do not have a written protocol in place for emergency CT scanning with interpretation (either remote or on-site, available 24/7).
14.3% of hospitals stated they cannot obtain a neurologic consultation.
28.6% of hospitals stated it takes, on average, greater than 60 minutes to administer tissue plasminogen activator (tPA) from time of patient arrival including one hospital that is in the process of measuring.
<p>Barriers to timely (tPA) administration:</p> <ul style="list-style-type: none"> <li>Need for accepting receiving facility</li> <li>Need for training</li> <li>Need for additional personnel in ED</li> <li>Time to obtain neurologist consultation</li> <li>Time to obtain CT scan</li> <li>Time to read CT scan</li> <li>Time to obtain lab results</li> <li>Pharmacy resources</li> <li>Need for collaborative approved protocol that considers all involved departments</li> <li>Telestroke machine out of order</li> <li>Delay in stroke activation</li> <li>Decision by family/patient and MD to administer tPA</li> </ul>
<p>Barriers to neurologic consultation:</p> <p>No specialty on call, we do call other facility from the ED to obtain non call consult; and not 24/7.</p> <p>Barriers to having a neurologist available 24/7 stated include: limited specialty on the island; limited to one neurologist on Kauai, only one on island, no telemedicine, neurologist refusal to consult.</p>

A second survey was conducted in July 2014 that included questions to assess current barriers to stroke care “what barriers currently exist, for your hospital, to improve the quality of care for stroke patients?” Responses:

- a) Personnel and Training: “Staffing and access to training; No neurosurgeon; Staff shortages (all areas), no neurologist (currently), no designated stroke program coordinator.”
- b) Resources: “No state financial support; Lack of Resources.”
- c) CT Scan: “No CT machine; Our hospital is a critical access hospital without CT scanning capabilities, we must transfer to our closest level 3 trauma center 30 minutes away for evaluation for suspected stroke; Lack of CT scanner; CT scanner that is outdated (placed in 2005) also have days when scanner is down for an extended period of time; Do not have a CT scanner.”
- d) Data: “Not all data concurrent; Unified electronic medical record, database, paper documentation; Access to patient health information from referring hospitals;

Inconsistent collection and reporting of patient data. Geographic isolation, low numbers.”

- e) Other: “Limited number of beds in the neurosciences ICU and ward. Frequency of ED on divert due to hospital census; Old angio suite; The tedious laws and procedures imposed for state facilities that must be navigated in order to provide a service or change.”

The STF will continue to meet and work together to address barriers that affect patient outcomes. Using stroke data collected from acute care hospitals and EMS, the STF will begin the process of reviewing the data, identifying areas for improvement, setting goals and developing strategies to improve the stroke system of care.

**Hawaii’s Cardiovascular Prevention Plan**

“Update the Hawaii cardiovascular disease stroke plan and conduct a needs assessment to ensure that neighbor island issues are addressed;”

Members of the STF include representation from all hospitals and county EMS in the state. Assessments to identify stroke system of care gaps and barriers were conducted, among STF member organizations, in October 2013 and July 2014.

The annual review of the prehospital and acute care section of the state plan show that a number of stroke objectives are being addressed by the STF. The Department of Health (DOH) and STF will continue to monitor progress of prehospital and acute care objectives in the state plan. The following is an update on the objectives in the state plan “Hawaii’s Plan for the Prevention of Heart Disease and Stroke.”

<b>Objective No.:</b>	<b>Progress:</b>
1.1: Establish a statewide stroke collaborative of representatives from organization within the stroke care community to monitor and improve the system of care in an effort to strengthen the chain of survival.	A STF has been established through a 2013 legislative resolution (September 2013 – November 2014). The STF plans to continue meeting to monitor and improve the stroke system of care.
4.1: Increase the percentage of all adults who can correctly identify the five symptoms of stroke and calling 9-1-1 as first choice for an emergency.	Educational efforts have been implemented through the use of DOH, Neurotrauma special funds (2014).  Ongoing monitoring of public awareness of the signs and symptoms of stroke are planned by including questions on the Behavioral Risk Factor Surveillance Survey. Currently we are seeking funding to collect this data on an ongoing basis.

<p>5.1: Increase and improve hospital tracking and evaluation of quality of care.</p>	<p>The STF (August 2014) has identified a minimum number of essential data elements for acute care hospitals to collect. The data collected through American Heart Association’s Get with the Guidelines (GWTG)-stroke registry will be accessed by DOH as a GWTG super-user. Aggregate reports are planned to be shared with the STF for their review to identify areas for quality improvement.</p>
<p>8.1: One hundred percent of EMS responders utilize an evidence-based standardized stroke assessment.</p>	<p>The STF members recommended the use of Los Angeles Prehospital Stroke Screen (LAPSS) as the uniform stroke assessment tool to be used statewide. LAPSS implemented statewide on March 31, 2014.</p>
<p>8.2: Increase the proportion of stroke patients that receive tPA treatment within best practice guidelines.</p>	<p>STF will begin to monitor tPA treatment for quality improvement using data from the statewide stroke registry.</p>

**Healthcare Transformation Priorities**

“Seek alignment with the State’s Healthcare Transformation priorities, including Patient Protection and Affordable Care Act (ACA) and federal meaningful use of health information technology priorities;”

The STF goals are in alignment with the ACA goals of providing better care and outcomes. Several initiatives were implemented to improve health outcomes and others are planned. For example, the coordination of care among acute care hospitals and EMS through the use of a statewide standardized prehospital evaluation of possible stroke patients along with a prehospital notification protocol to alert emergency departments of a high risk stroke arrival to their facility was implemented statewide in March 2014. In addition, a statewide stroke database will be used to collect and report on evidence-based stroke data elements from hospitals which will facilitate data sharing and improve quality related outcomes.

**EMS and Hospitals**

**Uniform Prehospital Protocol for Assessment of Stroke**

“Use uniform pre-hospital protocols for the assessment of stroke to alert appropriate hospitals to prepare for potential acute stroke patients prior to their arrival at the hospital;”

At the initial STF meeting held September 2013, a number of prehospital priority activities were identified: 1) identify and use a uniform stroke scale; 2) develop prehospital notification agreements; and 3) develop transportation protocols specific to stroke patients similar to those for trauma patients.

On November 5, 2013, the STF recommended the statewide use of a single prehospital stroke evaluation tool for screening individuals for possible stroke. In January 2014, a standing order for prehospital stroke for 9-1-1 advanced life support ambulances was developed and included in the EMS protocols. Notification letters were sent to all the hospitals on March 17, 2014 and City and County and private EMS agencies on March 19, 2014 signed by the DOH Chief of the Emergency Medical Services and Injury Prevention System Branch on behalf of the STF members. On March 31, 2014 the Los Angeles Prehospital Stroke Screen (LAPSS) along with the advance communication protocol was implemented statewide.

Future work in this area includes 1) Develop standardized expedited pathway for non-CT hospitals that would be useful to get the patient to a higher level of care; 2) Develop paramedic guide outlining standardized procedures when transporting stroke patients to another facility after receiving stroke treatment; and 3) Develop transportation protocols specific to stroke patients, similar to those for trauma patients.

### **Direct Transportation of Stroke Patients**

“Recommend protocols regarding direct transportation of stroke patients to appropriate hospitals by emergency medical personnel;”

In the first year, the STF was convened to review evidence-based guidelines to develop criteria for acute stroke ready hospitals (ASRH). Criteria and mechanisms are being developed for hospitals to apply for acute stroke ready status. In 2015, hospitals may apply to DOH via self-report attestation of their capability to meet acute stroke ready criteria. This will result in a listing of ASRHs to direct ambulance transportation protocol and inform EMS of hospitals they should by-pass.

### **Patients at Risk for Stroke are Provided Care at a Stroke Support Facility**

“Focus on ensuring that patients at risk of stroke are provided care, at minimum, at a stroke support facility based on criteria developed and used by the American Heart Association, American Stroke Association, or Brain Attack Coalition;”

December 2013–August 2014, the STF members reviewed and discussed the minimum criteria for an ASRH. The STF utilized the recently published *Formation and Function of Acute Stroke-Ready Hospitals Within a Stroke System of Care Recommendations from the Brain Attack Coalition* (December 2013) framework for ASRHs as a foundation for discussion and decisions.

The hospital criteria recommended by the STF have been compiled and is attached as Appendix A “Hawaii Acute Stroke Ready Criteria.” The criteria identifies essential and desirable elements of acute stroke ready hospitals and EMS along with the recommended validation methods.

The STF recommended that hospitals seeking ASRH designation provide written attestation for essential criteria, collect specific stroke data, and provide data access to DOH for statewide reporting. The STF will be responsible to review attestation forms submitted to the DOH and make recommendations for recognizing hospitals as acute stroke ready. A checklist for hospitals applying for ASRH is attached as Appendix B, “Hospital Attestation Checklist.” It was further recommended that ASRHs provide an updated attestation, for review by the DOH, every two years.

## **Data**

### **Data Requirements and Statewide Registry**

“Establish a statewide stroke database and registry in which all hospitals and healthcare facilities can participate and consider the feasibility of integrating the data registry component through American Heart Association or American Stroke Association super-user licensure for the Department of Health; “... that the statewide stroke database and registry include performance measurements obtained using a standardized stroke measure set containing data that is consistent with nationally-recognized guidelines on the treatment of individuals with confirmed stroke within the state, such as the American Heart Association’s “Get With The Guidelines – Stroke” or the Joint Commission’s “Stroke Performance Measurement Implementation Guide”;

A survey was completed in July 2014 to identify the types of data collection systems hospitals were currently using. It was found that eight hospitals use GWTG-Stroke registry tool and six have other collection methods (proprietary databases, electronic health records and handwritten records). A minimum data set for a statewide stroke database was recommended by the STF. Recommendations were made based on standard metrics that apply to ASRH as outlined in the *Formation and Function of Acute Stroke-Ready Hospitals Within a Stroke System of Care Recommendations from the Brain Attack Coalition*, such as door-to-needle and door-to-image times. It was recommended that initial data collection focus on a subset of the GWTG-stroke data set, so that collection would not be overly burdensome for hospitals with limited resources. A complete set of data elements recommended by the STF is attached as Appendix C “Hawaii Stroke Database Elements.”

The STF recommended that hospitals use GWTG-Stroke registry due to the number of hospitals already using it. In addition, the registry aligns with the essential data elements defined for Hawaii’s ASRHs and there is a ready-made “super-user” infrastructure that will provide DOH with tools to monitor and report on statewide stroke data. GWTG-Stroke registry collects patient level data on characteristics, diagnostic testing, treatments, adherence to quality measures and in-hospital outcomes in patients hospitalized with stroke and transient ischemic attack (TIA).

The DOH super-user will only be able to view and download data from hospitals that execute a participating hospital agreement. The DOH will also be required to enter into a data use agreement with AHA's vendor allowing read-only access to GWTG stroke data.

Support for hospitals to purchase GWTG-Stroke registry will be requested from DOH, Developmental Disabilities Division (DDD) the administrator of the Neurotrauma Special Fund. An initial meeting was held in September with DDD leadership and they were supportive of the request for funds and plan to present the funding request to the Special Fund Subcommittee Advisory Board.

Data reporting is expected to begin after GWTG--Stroke registry is implemented and data use agreements are executed.

## **Legislation and Funding**

“Propose legislation necessary to support Hawaii's stroke care continuum; ...and recommended funding levels, to establish a stroke system of care...”

The STF is not requesting funds from the 28<sup>th</sup> Legislature to support the Hawaii stroke care continuum.

Funding is being requested from the DOH, Neurotrauma Special Fund (Chapter 321H-4, HRS). A proposal will be presented to the Special Fund Subcommittee of the Neurotrauma Advisory Board in December 2014 to support the following activities in 2015:

1. Provide GWTG-stroke registry patient management tool to hospitals which do not currently participate to support participation in the statewide stroke registry.
2. Provide an annual GWTG “super-user” license for DOH to access data from the registry to monitor and report on statewide stroke performance measures.

Additional requests will be made, as needed, to the Neurotrauma Special Fund to:

1. Provide customization to the GWTG-stroke data template to tailor to Hawaii's population.
2. Obtain hospital discharge reports and data on stroke patients to monitor outcomes.
3. Participate in the Behavioral Risk Factor Surveillance Survey to monitor the public's awareness of signs and symptoms of stroke and importance of calling 9-1-1.
4. Promote statewide education to improve awareness of the signs and symptoms of stroke and the importance of calling 9-1-1.

Legislation will be drafted to support continuous improvement of the stroke system of care in the state of Hawaii for the 2015 session. DOH plans to use existing resources to support improved outcomes for stroke patients in the community. Language may include:

1. Categorize hospitals according to their capabilities to receive and manage acute stroke patients.
2. Provide guidance to pre-hospital dispatch, transport and transfer protocols.

3. Convene a Statewide Stroke Quality Improvement Committee to include all facilities caring for stroke patients and other interested parties.
4. Collect statewide data on outcomes of stroke patients for the purposes of planning and evaluation.
5. Provide public and professional education related to the recognition and care of stroke, public awareness and the importance of calling 9-1-1.

## **Reporting to Legislature**

### **Initial Report**

“An initial report to the Legislature by December 31, 2013;”

On November 18, 2013, a draft report to the legislature was provided to the STF for review and comment. The initial report was submitted to the Legislature on December 31, 2013.

### **Final Report**

“A final report to the Legislature no later than 20 days prior to the convening of the Regular Session of 2015, of the task force’s actions taken and progress made, including findings, recommendation, and any proposed legislation and recommended funding levels, to establish a stroke system of care that includes the creation of a statewide stroke database and registry;”

On November 7, 2014, a draft report to the legislature was provided to the STF for review and comment. The legislative report will be submitted to the Legislature prior to the convening of the 28<sup>th</sup> Session.

## Appendix A: Acute Stroke Ready Criteria

### The Hawaii Acute Stroke Ready Criteria

Draft 10/13/2014

The reference document used to establish acute stroke ready criteria for hospitals and emergency medical services in Hawaii was based on information published in “Stroke” a journal of the American Heart Association entitled “Formation and Function of Acute Stroke-Ready Hospitals within a Stroke System of Care Recommendations from the Brain Attack Coalition.” December 2013

Acute Stroke Ready Hospital (ASRH) as defined by the Hawaii Stroke Task Force (Sept. 2013). An ASRH has the infrastructure and capability to care for acute stroke, including administration of tissue plasminogen activator (tPA). ASRHs would have fewer capabilities than a Primary Stroke Center, but be able to diagnose, stabilize, treat and transfer, as appropriate, patients with stroke. Some ASRHs will admit patients and provide inpatient stroke care. The ASRH that admits stroke patients would adhere to established inpatient care criteria as outlined in *The Hawaii Acute Stroke Ready Criteria* document established by the Hawaii Stroke Task Force.

\*Rating: E is an essential element of an ASRH requiring validation and reporting of performance measures to the Department of Health. D is a desirable element of an ASRH; validation to an outside organization is not required.

Acute Stroke Team			
Rationale: An acute stroke team (AST) is a key component of an ASRH. Studies have shown the importance of such a response team to provide organized care in a safe and efficient manner. The presence of an AST is an independent predictor of the ability to administer intravenous thrombolytic therapy, reduce mortality and may also be a factor in the improved outcomes of stroke patients.			
	Criteria	Rating*	Validation Method
1	a) Acute stroke team available to emergency department within 15 minutes of ED acute stroke activation 24/7/365 either at the bedside or via telehealth. b) A stroke team is defined as a minimum of two (2) members (see No. 2 for specific disciplines).	E	<b>Documentation and Reporting:</b> Provide signed attestation to the Department of Health (DOH) with initial application and every two years thereafter. <b>Data:</b> Not required to be reported to the stroke registry. Recommend internal methods be developed to track this performance measure.
2	The staffing of the acute stroke team, should at a minimum include a nurse (or nurse practitioner or physician assistant) and a physician (regardless of telehealth capacity). <ul style="list-style-type: none"> <li>A neurologist or neurosurgeon would be ideal members of the AST; higher levels of physician expertise in stroke care can be provided via telehealth with another facility.</li> </ul>	D	
3	Each member of the AST has at a minimum of some basic training in	D	

	<p>acute stroke care.</p> <ul style="list-style-type: none"> <li>Physicians and nurse members of the AST receive at least 4 hours annually in education related to cerebrovascular disease, with an emphasis on acute care, diagnosis, and treatment.</li> </ul>			
--	--	--	--	--

**Written Stroke Protocols**

Rationale: Written or (preferably) electronic stroke protocols are an essential element of an ASRH. A written stroke protocol is an essential element to ensure that all patients with stroke receive organized care in a safe and an efficient manner. A written protocol also ensures that important care elements are not omitted, and that prohibited medications or treatments are not administered.

Criteria	Rating*	Validation Method
<p>4 A written stroke protocol should include standardized order sets that deal with aspects of acute diagnosis, such as checks of vital signs and neurologic function, blood work, and brain imaging studies.</p> <p>a) These protocols should encompass care in the ED as well as in-hospital (if appropriate).</p> <p>b) Protocols should be developed by a multidisciplinary team; reviewed annually and revised as needed to reflect changes in medical knowledge, care standards, and guidelines.</p> <p>c) Written protocols should address ischemic stroke at a minimum.</p> <p>d) The protocols can be paper-based or computer-based, depending on the standard practice at a specific facility.</p>	E	<p><b>Documentation and Reporting:</b> Provide signed attestation to the DOH with initial application and every two years thereafter.</p> <p><u>Note:</u> A copy of the stroke protocols are <i>not</i> required to be provided to DOH.</p>

**Emergency Medical Services**

Rationale: A well-trained and organized EMS is a key component for a stroke system of care. In most settings, a patient with an acute stroke is taken to the hospital by emergency medical service (EMS) personnel. The ability of EMS personnel to recognize patients with a possible stroke, to communicate their findings to the receiving hospital, and to stabilize and transport such patients is essential to the effective role of an ASRH with a stroke system of care.

Criteria	Rating*	Validation Method
<p>5 a) EMS authorities must ensure that there are written protocols that detail how a patient with a suspected stroke is triaged, treated, and transported to the closest most appropriate hospital.</p> <p>b) EMS providers should have protocols that address the</p>	E	<p><b>Documentation:</b> EMS agencies attest to written protocols, care pathway and implementation of statewide prehospital evaluation using the Los Angeles Prehospital Stroke Screen (LAPSS) and advanced communication protocol.</p> <p><b>Reporting:</b> Provide a signed attestation letter to the DOH initially</p>

	assessment, triage, treatment, and transportation of patients with a suspected acute stroke. c) Include a plan for notification of the ED by EMS of an en route patient with stroke based on the Los Angeles Prehospital Stroke Screen (LAPSS).		and every two years thereafter.
6	Use of prehospital activation of acute stroke care pathway based on EMS report of LAPSS and time last known normal.	E	<b>Data (DOH):</b> HEMIS data will be used to review whether or not LAPSS was used and pre notification to the hospital occurred. DOH to provide data to hospitals and EMS annually.  Note: Hospitals are encouraged to provide feedback to EMS and the DOH routinely to conduct follow-up with City and County and District Medical Officers to support compliance with the protocols.
7	EMS personnel have specific education in the recognition of patients with a possible stroke, including training in the use of LAPSS. Education in acute stroke diagnosis and treatment should occur at least every two years or as needed.	E	<b>Documentation and Reporting:</b> EMS agencies to provide a letter attesting to training every two years.

### Emergency Department

Rationale: The existence of a well-organized Emergency Department (ED) with trained personnel is a key element of an ASRH. Most patients with acute stroke will enter the ASRH through the emergency department. It is essential that ED personnel have stroke protocols in place for the acute diagnosis, stabilization, monitoring, and treatment of patients with all types of stroke. Studies show that continuing medical education of the medical staff is an independent predictor of receiving intravenous tPA (tissue plasminogen activator), which is an important medical therapy for acute ischemic stroke.

	Criteria	Rating*	Validation Methods
8	Written ED acute stroke activation care pathway and order set (hospitals will determine their own criteria for activation). ED protocols should include detailed instructions for the administration of intravenous tPA for ischemic stroke and post tPA care.	E	<b>Documentation and Reporting:</b> Provide attestation to DOH with initial application and every two years thereafter.
9	Documentation of the National Institute of Health Stroke Scale (NIHSS) score for all ED acute stroke patients evaluated. Note: Use of the full scale is recommended.	E	<b>Data:</b> 1. Initial NIH stroke scale 2. Total score <b>Reporting:</b> Provide DOH access to data through GWTG-stroke registry.
10	It is strongly recommended that healthcare providers administering the NIH stroke scale take a course for	D	

	certification (available online).			
11	ED personnel should have a minimum of 4 hours annually of educational time that is related to the care of patients with cerebrovascular disease and to ensure staff are aware of protocol updates.	D		

### Laboratory Capacity

Rationale: The availability of standard laboratory testing with rapid completion times is a key component of an ASRH. The ability to perform and to complete basic laboratory testing on patients with stroke is essential for diagnosing metabolic and infectious disorders that can masquerade as a stroke syndrome, to ensure that patients with stroke can be treated with the proper acute medications, and to determine the possible causes of some types of stroke.

	Criteria	Rating*	Validation Method
12	Perform and complete basic laboratory tests, electrocardiogram, and a chest radiograph at all times 24/7/365 within 45 minutes of ordering.	E	<p><b>Documentation and Reporting:</b> Provide attestation to DOH initially and every two years thereafter.</p> <p><b>Data:</b> No data collection on time required for registry. It is recommended that hospitals monitor this performance metric internally.</p>

### Pharmacy Capacity

	Criteria	Rating*	Validation Method
13	Availability of alteplase (recombinant tissue plasminogen activator) 24/7/365. Minimum of two doses in stock.	E	<p><b>Documentation and Reporting:</b> Provide attestation to DOH with initial application and every two years thereafter.</p>

### Brain Imaging

Rationale: The ability to complete and to interpret emergency (head CT) within a specified time period is a key component for an ASRH. Brain imaging confirms the absence of contraindications to thrombolytic therapy and may help diagnose intracerebral hemorrhagic.

In most cases, the first (and perhaps only) imaging study readily available will be a non-contrast head CT. This type of scan is usually sufficient to rule out other conditions that could present with stroke-like symptoms, such as a subdural hematoma, large abscess, or tumor. When performed acutely, a head CT will often be either negative or show only subtle changes in cases of ischemic stroke, especially if the stroke is small or acute. A head CT is sensitive and accurate for the diagnosis of most types of brain hemorrhagic (i.e., subarachnoid hemorrhage).

	Criteria	Rating*	Validation Method
14	<p>a) Acute brain imaging capabilities and interpretation services must be available on a 24/7 basis.</p> <p>b) Personnel interpreting such scans should be board-certified radiologists, board eligible or other physicians with experience and expertise in reading head CTs.</p>	E	<p><b>Documentation and Reporting:</b> Provide attestation to DOH with initial application and every two years thereafter.</p>
15	Head CT initiated within 20 minutes of	E	<b>Data:</b>

	patient arrival 24/7/365 (technician and equipment available).		1. Brain imaging completed at your hospital for this episode of care. 2. Date and time brain imaging initiated. <b>Reporting:</b> Provide DOH access to data through GWTG-stroke registry.
16	Non-contrast head CT be performed and read within 45-minutes of being ordered.  Reading and interpreting emergent scans can be performed by onsite personnel or via a tele-radiology process. Whether the interpretation is done onsite or remotely, the formal reading results should be communicated to the treating physician within the timeframe noted above.	E	<b>Data:</b> No data collection on time of read required. <b>Note:</b> Recommend hospitals monitor this performance measure internally. <b>Documentation and Reporting:</b> Provide attestation to DOH with initial application and every two years thereafter
<b>Emergent Therapies</b>			
Rationale: An ASRH should be able to deliver several acute therapies that can improve outcomes for patients with a variety of strokes. In addition, the ASRH should have protocols and polices in place that define treatments to address various clinical presentations and complications which may arise in acute stroke patients. The staffs at the ASRH and any receiving hospital should develop protocols that enhance clear and concise communication and feedback. The use of telehealth and related technologies may aid the treating clinicians and help guide therapy.			
	<b>Criteria</b>	<b>Rating*</b>	<b>Validation Method</b>
17	a) Protocols in place for intravenous tPA (tissue plasminogen activator) for acute ischemic stroke with capability to administer tissue plasminogen activator (tPA) within 60 minutes of patient arrival.  b) Capabilities to address associated complications including measures to reverse coagulopathies in patients with brain hemorrhage.	E	<b>Documentation and Reporting:</b> Provide attestation to DOH with initial application and every two years thereafter.
18	Door-to-needle time to administer intravenous tPA established. ED arrival to IV bolus initiation within 60 minutes.	E	<b>Data:</b> 1. IV tPA initiated at this hospital. 2. Date/Time IV tPA initiated. <b>Reporting:</b> Provide DOH access to data through GWTG-stroke registry.
19	Protocols that address emergency therapies including steps to control and reduce elevated intracranial pressures in appropriate patients, control of seizures, treatment of blood pressures	D	

	that are too high or too low, and stabilization of other vital functions and metabolic derangements and an assessment of initial neurological function, as well as stroke severity.			
--	---	--	--	--

### Inpatient Stroke Care “Stroke Unit”

Rationale: There is abundant data from individual studies and meta analyses that stroke units improve outcomes and reduce in-hospital complications. ASRHs that envision admitting some of these patients should develop a formal stroke unit. For an ASRH that transfers the majority of stroke patients to a nearby PSC the need for a formal stroke unit is somewhat mitigated.

- Although there may be some patients with stroke who are unlikely to benefit from a stroke unit most patients will benefit from the intense nursing care and protocols common to stroke units, telemetry monitoring and similar interventions.
- In cases when a stroke patient is not transferred to a PSC or CSC, some of the performance measures that are used at these facilities should be adapted and modified for use at the ASRH.

	Criteria for ASRHs admitting stroke patients	Rating*	Validation Method
20	Well-trained nursing personnel. Defined as nurses trained (at a minimum) in the following inpatient care: 1. Swallow screen/evaluation 2. Neurological assessment tools and scales 3. Post tPA (tissue plasminogen activator) care	E	<b>Documentation and Reporting:</b> Provide attestation to DOH with initial application and every two years thereafter.
21	Multichannel telemetric monitoring	E	
22	Care protocols to include at a minimum: 1. Swallow screen/evaluation 2. Deep vein thrombosis prophylaxis 3. Post tPA care i.e. early recognition of possible side effects	E	
23	A swallow assessment should be conducted for patients prior to receiving anything by mouth.	E	<b>Data:</b> 1. Was patient screened for Dysphagia prior to any oral intake including water or medication 2. If yes, Dysphagia screening results <b>Reporting:</b> Provide DOH access to data through GWTG-stroke registry.
24	Deep vein thrombosis prophylaxis	E	<b>Data:</b> 1. What date was the initial VTE prophylaxis administered after hospital admission? <b>Reporting:</b> Provide DOH access to data through GWTG-stroke registry.
25	Use of antithrombotics within 48 hours of admission	E	<b>Data:</b> 1. Was antithrombotic therapy administered by the end of day two? <b>Reporting:</b> Provide DOH access to data through

			GWTG-stroke registry.
26	Anticoagulants for patients with stroke because of atrial fibrillation	E	<b>Data:</b> 1. Prescribed? 2. Anticoagulant prescribed: <b>Reporting:</b> Provide DOH access to data through GWTG-stroke registry.
27	Patient and/or caregiver received education and/or resource materials regarding the following: 1. Personal modifiable risk factors for stroke 2. How to activate EMS for stroke 3. Their prescribed medication 4. Stroke warning signs and symptoms 5. Need for follow-up after discharge	E	<b>Documentation and Reporting:</b> Provide attestation to DOH with initial application and every two years thereafter.
28	All stroke inpatients receive a standardized rehabilitation evaluation.  Patient assessed for and/or received rehabilitation services during this hospitalization (GWTG): <ul style="list-style-type: none"> <li>• Patient transferred to rehabilitation facility.</li> <li>• Patient referred to rehabilitation service following discharge.</li> <li>• Patient ineligible to receive rehabilitation services because symptoms resolved.</li> <li>• Patient ineligible to receive rehabilitation services due to impairment.</li> </ul> Availability to stroke inpatients physical therapy, occupational therapy and speech language pathology services.	E	<b>Data:</b> 1. Modified Rankin Scale at Discharge 2. Total Score

### Neurosurgical and Neurointerventional Services

Rationale: Some patients who present to an ASRH will need acute or eventual neurosurgical evaluation and treatment, particularly those with large ischemic strokes, cerebellar strokes, intracerebral hemorrhages, or subarachnoid hemorrhages. A neurosurgeon may not be readily available at many ASRHs. A plan for addressing potential neurosurgery cases will ensure an organized and timely transfer of care for this type of stroke patient. This is an area where tele-technologies and urgent transfer of patients after they are stabilized would be most appropriate and effective. Note: More rapid transfer is indicated for patients not eligible for IV therapy, but may be eligible for intra-arterial therapy. In general, delays in transfer should be avoided.

	Criteria	Rating*	Validation Method
29	Neurosurgical services be available to stroke patients within 2 hours (by ground transportation) or 4 hours by air transport, of when deemed necessary and once a neurosurgeon	D	

	has been secured.		
30	Written neurosurgery call schedule and a clear triage and transportation plan for those patients in need of acute neurosurgical services.	D	
31	Written agreement between the ASRH and at least one hospital that has neurosurgery coverage on a 24/7 basis consistent with the PSC or CSC recommendations.	D	

### Administrative Support and Leadership

Rationale: Any hospital seeking to become an ASRH will need the support of hospital administration. This includes organizational support, financial resources, and political assistance. Another important element is medical leadership of the program. A neurologist or neurosurgeon might be beneficial or even optimal in many cases; the distribution of these specialists is likely to limit their availability at many ASRH facilities. Other specialists who might lead such a program include emergency medicine physicians, internists, and radiologists, among other. In some settings, advance practice nurses have been successful in leading a stroke center.

Criteria	Rating*	Validation Method
32	E	<b>Documentation and Reporting:</b> Provide to DOH initially and every two years thereafter.
33	D	
34	D	

	Specialized training might include completion of a fellowship or other specialized training in the areas of cerebrovascular disease, attendance at national courses, prior experience in a neuroscience ICU, etc.			
--	---	--	--	--

### Tele-technologies

Rationale: Because of the relatively isolated location of most ASRHs, the use of a telestroke type of technology will be needed at many of these facilities. The use of telehealth technologies at most ASRHs is a key component to provide acute care and its general use is supported by many studies. The ongoing medical care beyond the acute period for patients with active cerebrovascular disease should be provided by trained medical personnel at the facility who can be at the patient's bedside.

Criteria		Rating*	Validation Method
35	For ASRHs that provide stroke coverage through telehealth establishment of a telehealth link (by the hospital with the patient) within 20 minutes of when it is deemed medically necessary.	E	<b>Documentation and Reporting:</b> Provide to DOH initially and every two years thereafter. <b>Data:</b> Not required for the registry. Recommend hospitals develop internal systems to monitor link times.
36	Telehealth requires high quality, real-time, two-way audio and visual telecommunication between the patient and provider using equipment and software that ensure patient privacy. This would be essential for the ASRHs that use telemedicine.  Technical capabilities of the telehealth system meet current standards.	E	
37	Telehealth program be supported by a written contractual agreement that addresses performance standards, legal issues, and reimbursement.	D	

### Transfer of Patients to a Primary Stroke Center

Rationale: Many stroke patients will require tertiary services at a PSC that are not available at the ASRH. In these circumstances, safe and timely patient transfers are important. This is especially true of “drip and ship” patients who are transferred during or after tPA (tissue plasminogen activator infusion).

Criteria		Rating*	Statewide Protocol
38	Some patients will be transferred while they are receiving various acute medications or shortly after such medications are administered (i.e. drip and ship).  Specific transfer criteria and expectations for care en route should	E	A statewide EMS protocol <i>to be</i> developed for regular 911 transports for all stroke patients including standing orders for “drip and ship” patient care en route to a PSC.

	<p>also be part of the transfer agreement or be detailed in documents that are exchanged between the institutions.</p> <ol style="list-style-type: none"><li>1. In all “drip and ship” cases, close attention and documentation should be provided about the type of therapy, dosing, time of initiation completion and complications.</li><li>2. During the transfer, the patient must be accompanied by medical personnel who has training and expertise directly related to the therapy being used.</li></ol>		
--	--	--	--

## Appendix B: Hospital Attestation Checklist

### Hospital Attestation for Acute Stroke Ready Hospital

*Draft 10/10/2014*

The attestation document is a checklist of the essential elements of an Acute Stroke Ready Hospital (ASRH) as identified by the Hawaii Stroke Task Force. The reference numbers in the form below refer to the document entitled “The Hawaii Acute Stroke Ready Criteria” which outlines both the essential and desired criteria for an ASRH.

Essential criteria of an ASRH is validated through hospital attestation and the reporting of specific stroke data to the Hawaii State Department of Health.

ASRH defined by the Hawaii Stroke Task Force: An ASRH has the infrastructure and capability to care for acute stroke, including administration of tissue plasminogen activator (tPA)). ASRHs would have fewer capabilities than a PSC, but be able to diagnose, stabilize, treat and transfer, as appropriate, patients with stroke. ASRHs that administer tPA and transfer only would have transfer agreements with area hospitals. Some ASRHs will admit patients and provide inpatient stroke care. The ASRH that admits stroke patients would adhere to established inpatient care criteria as outlined in the ASRH criteria document and established by the HI Stroke Task Force.

Please complete the form by describing your current capability related to the essential criteria including plans and timeline to meet criteria if not currently complete.

### Hospital Attestation Checklist Acute Stroke Ready Hospital

	ASRH Essential Criteria Reference No.	ASRH Criteria	Circle one: Status of capability:		Describe current capability, plan or activities in place to meet criteria and proposed timeline to complete activity.	Questions/Comments from the Reviewers
			Complete (C)	In progress (IP)		
<b>All ASRHs</b>			Complete (C)	In progress (IP)		
1	1a	Internal methods in place to track activation times for acute stroke team available to the emergency department within 15 minutes of ED stroke activation 24/7/365 either at the bedside or via	C	IP		

**Hospital Attestation Checklist**  
**Acute Stroke Ready Hospital**

	<b>ASRH Essential Criteria Reference No.</b>	<b>ASRH Criteria</b>	<b>Circle one: Status of capability:</b>		<b>Describe current capability, plan or activities in place to meet criteria and proposed timeline to complete activity.</b>	<b>Questions/Comments from the Reviewers</b>
		telehealth.				
	1b	Minimum of two members on the acute stroke team. Include one physician and one nurse (or nurse practitioner or physician assistant).	C	IP		
2	4	<p>Written stroke protocol in place that includes standardized order sets that deal with aspects of acute diagnosis, such as checks of vital signs and neurologic function, blood work, and brain imaging studies.</p> <p>a) These protocols should encompass care in the ED as well as in-hospital (if appropriate).</p> <p>b) Protocols should be developed by a multidisciplinary team; reviewed annually and revised as needed to reflect changes in medical knowledge, care standards, and guidelines.</p> <p>c) Written protocols should address ischemic stroke at a minimum.</p> <p>The protocols can be paper-based or computer-based, depending on the standard practice at a specific facility.</p>	C	IP		
3	8	Written ED acute stroke activation care	C	IP		

**Hospital Attestation Checklist**  
**Acute Stroke Ready Hospital**

	ASRH Essential Criteria Reference No.	ASRH Criteria	Circle one: Status of capability:		Describe current capability, plan or activities in place to meet criteria and proposed timeline to complete activity.	Questions/Comments from the Reviewers
		<p>pathway and order set implemented (hospitals will determine their own criteria for activation).</p> <p>ED protocols include detailed instructions for the administration of intravenous tPA (tissue plasminogen activator) for ischemic stroke.</p>				
4	12	Capability to perform and complete basic laboratory tests, electrocardiogram, and a chest radiograph at all times 24/7/365 within 45 minutes of ordering.	C	IP		
5	13	Alteplase (recombinant tissue plasminogen activator) available 24/7/365. Minimum of two doses in stock.	C	IP		
6	14a	Acute brain imaging capabilities and interpretation services available on a 24/7 basis.	C	IP		

**Hospital Attestation Checklist**  
**Acute Stroke Ready Hospital**

	ASRH Essential Criteria Reference No.	ASRH Criteria	Circle one: Status of capability:		Describe current capability, plan or activities in place to meet criteria and proposed timeline to complete activity.	Questions/Comments from the Reviewers
			C	IP		
7	14b	Personnel interpreting such scans are board-certified radiologists, board eligible or other physicians with experience and expertise in reading head CTs.	C	IP		
8	16	Internal methods in place to track non-contrast head CT capability to be performed and read within 45-minutes of being ordered.	C	IP		
9	17a	Protocols in place for intravenous tPA for acute ischemic stroke with capability to administer tissue plasminogen activator (tPA) within 60 minutes of patient arrival. Protocols for post-tPA care.	C	IP		
10	17b	Capabilities to address associated complications including measures to reverse coagulopathies in patients with brain hemorrhage.	C	IP		

**Hospital Attestation Checklist**  
**Acute Stroke Ready Hospital**

	ASRH Essential Criteria Reference No.	ASRH Criteria	Circle one: Status of capability:		Describe current capability, plan or activities in place to meet criteria and proposed timeline to complete activity.	Questions/Comments from the Reviewers
1 1	32	<p>There is a designated senior administrator to provide the resources for a successful program.</p> <p>Note: The senior administrator can assign a designee such as a stroke coordinator to ensure the administration of the stroke program. Some of the administrative duties would include:</p> <p>Organize and prioritize key programmatic elements, be the point person to oversee performance improvement activities (including data collection), liaison with the Department of Health for data reporting, convene a multi-disciplinary team, and ensures education, training, and implementation of protocols.</p>	C	IP		
1 2	9,15, 18, 23-26, 28	<p>Capability to collect data using GWTG-stroke patient management tool and provide access to DOH on stroke data elements agreed on by the Stroke Task Force and outlined in the “Hawaii Stroke Database Elements” document.</p>	C	IP		

**Hospital Attestation Checklist**  
**Acute Stroke Ready Hospital**

	ASRH Essential Criteria Reference No.	ASRH Criteria	Circle one: Status of capability:		Describe current capability, plan or activities in place to meet criteria and proposed timeline to complete activity.	Questions/Comments from the Reviewers
<b>ASRHs that admit stroke patients</b>						
1 3	20	Nurses trained (at a minimum) in the following: 1. Swallow screen/evaluation 2. Neurological assessment tools and scales. 3. Post tPA (tissue plasminogen activator) care i.e. early identification of possible side effects	C	IP		
1 4	21	Multichannel telemetric monitoring available.	C	IP		
1 5	22	Inpatient care protocols (to include at a minimum) implemented for: Swallow screen/evaluation Deep vein thrombosis prophylaxis Post tPA care i.e. early identification of possible side effects	C	IP		

**Hospital Attestation Checklist**  
**Acute Stroke Ready Hospital**

	ASRH Essential Criteria Reference No.	ASRH Criteria	Circle one: Status of capability:		Describe current capability, plan or activities in place to meet criteria and proposed timeline to complete activity.	Questions/Comments from the Reviewers
1 6	27	Patient and/or caregiver are provided education and/or resource materials for the following:  1. Personal modifiable risk factors for stroke 2. How to activate EMS for stroke 3. Their prescribed medication 4. Stroke warning signs and symptoms 5. Need for follow-up after discharge	C	IP		
1 7	28a	Stroke inpatients receive a standardized rehabilitation evaluation. Patients assessed for and/or receive rehabilitation services during this hospitalization. Documentation includes: 1. Patient transferred to rehabilitation facility. 2. Patient referred to rehabilitation service following discharge. 3. Patient ineligible to receive rehabilitation services because symptoms resolved. 4. Patient ineligible to receive rehabilitation services due to impairment.	C	IP		

**Hospital Attestation Checklist**

**Acute Stroke Ready Hospital**

	ASRH Essential Criteria Reference No.	ASRH Criteria	Circle one: Status of capability:		Describe current capability, plan or activities in place to meet criteria and proposed timeline to complete activity.	Questions/Comments from the Reviewers
	28b	Inpatient rehabilitation services available for physical therapy, occupational therapy and speech, language pathology.	C	IP		
<b>Telehealth hospitals only</b>						
18	35	For ASRH providing stroke coverage through telehealth establish telehealth link within 20 minutes of when it is deemed medically necessary. Link established by the hospital with the patient.	C	IP		
19	36	The telehealth system is of high quality, real-time, two-way audio and visual telecommunication between the patient and provider using equipment and software that ensure patient privacy. Technical capabilities of the telehealth system meet current standards.	C	IP		
<b>All ASRHs</b>						
20		I have read and understand the “Acute Stroke Ready Criteria” which includes	Yes	No	Comments/Questions:	

**Hospital Attestation Checklist**  
**Acute Stroke Ready Hospital**

	ASRH Essential Criteria Reference No.	ASRH Criteria	Circle one: Status of capability:		Describe current capability, plan or activities in place to meet criteria and proposed timeline to complete activity.	Questions/Comments from the Reviewers
		both the essential and desirable elements of an ASRH.				

Hospital Name: \_\_\_\_\_ Physical Address: \_\_\_\_\_

\_\_\_\_\_

Mailing Address if different: \_\_\_\_\_

\_\_\_\_\_

**Stroke Coordinator Contact Information:**

Name: \_\_\_\_\_ Phone Number: \_\_\_\_\_ Email: \_\_\_\_\_

**Attestation signatures:**

\_\_\_\_\_  
 Chief Executive Office (Print name)      Signature of Chief Executive Officer      Date

\_\_\_\_\_  
 Chief Medical Officer (Print name)      Signature of Chief Medical Officer      Date

\_\_\_\_\_  
 Senior Administrator or designated Stroke      Signature of Sr. Admin or Stroke Coordinator      Date

Coordinator (Print name)

**Mail completed forms to:** Hawaii State Department of Health  
EMS and Injury Prevention Systems Branch  
3650 Maunalei Avenue, Honolulu, HI 96816  
Attn: Branch Chief  
Questions please call: 808-733-9210

The reference document used by the Hawaii Stroke Task Force to establish acute stroke-ready criteria for hospitals and emergency medical services in Hawaii was based on information published in "Stroke" a journal of the American Heart Association entitled "Formation and Function of Acute Stroke-Ready Hospitals within a Stroke System of Care Recommendations from the Brain Attack Coalition." December 2013.

**Approved Acute Stroke Ready**

**Denied Acute Stroke Ready**

**Request for more information (see comments above)**

Reviewers:

\_\_\_\_\_  
Name

\_\_\_\_\_  
Affiliation

\_\_\_\_\_  
Date of review

\_\_\_\_\_  
Name

\_\_\_\_\_  
Affiliation

\_\_\_\_\_  
Date of review

\_\_\_\_\_  
Name

\_\_\_\_\_  
Affiliation

\_\_\_\_\_  
Date of review

## Appendix C: Hawaii Stroke Database

Hawaii Stroke Database Elements					
Item	Data Elements	Text Prompt	Field Type	Legal Values	Notes

Hawaii Stroke Database Elements						
Item	Data Elements	Text Prompt	Field Type	Legal Values	Notes	
<b>Demographic Data</b>	Age	Age  _ _ _  years	Numeric ### = 3-digit	0 < age < 125		
	Gender	Gender	Numeric # = 1-digit	1 - Male; 2 - Female; 3 - Unknown	Select only 1 gender	
	Race	White		1 -Yes; 0 - No	Select all race options that apply. Default = 0	
		Black or African American				
		Asian				
		Native Hawaiian or Other Pacific Islander				
		American Indian or Alaskan Native				
Unknown or unable to determine						
<b>Pre-Hospital/ Emergency Medical System (EMS) Data</b>	Arrival Mode	How did the patient get to your hospital for treatment of their stroke?	Numeric # = 1-digit	1 – EMS from home or scene; 2 - Private transportation/taxi/other; 3 - transfer from another hospital; 9 - ND or unknown		
	Ed Transfer	Patient was transferred from your ED to another acute care hospital without being admitted to your hospital	Numeric # = 1-digit	1 -Yes; 0 - No/ND		
	EMS Pre-notification	Advance notification by EMS	Numeric # = 1-digit	1 -Yes; 0 - No/ND; 9-Not applicable		
<b>Date &amp; time of arrival at your hospital - What is the earliest documented time (military time) the patient arrived at the</b>	Date and Time of ED Arrival	___/___/_____	Date MMDDYYYY			

Hawaii Stroke Database Elements					
Item	Data Elements	Text Prompt	Field Type	Legal Values	Notes
<b>hospital?</b>					
		--:--	Time HHMM		
		Date Not documented	Numeric # = 1-digit	1 - Yes; 0 - No	
		Time Not documented			
<b>Imaging</b>	Brain Imaging completed	Was Brain Imaging Performed at your hospital after arrival as part of the initial evaluation for this episode of care or this event?	Numeric # = 1-digit	1 - Yes; 0 - No/ND; 2 - NC - if outside imaging prior to transfer or patient is DNR/CMO	
	Date and time of brain imaging	--/--/----;	MMDDYYYY		Date of initial brain imaging
		--:--	Time HHMM		Time of initial brain imaging
		Date Not documented or unknown	Numeric # = 1-digit	1 - Yes; 0 - No	
		Time Not documented or unknown	Numeric # = 1-digit		
<b>NIH Stroke Scale Score</b>	NIH Stroke Scale Score	Was NIH Stroke Scale score performed as part of the initial evaluation of the patient?	Numeric # = 1-digit	1 - Yes; 0 - No/ND	Yes = use of the full NIH scale not the modified scale.
		If performed, what is the first NIH Stroke Scale total score recorded by hospital personnel?	Numeric ## = 2-digit	Range 00-42	

Hawaii Stroke Database Elements					
Item	Data Elements	Text Prompt	Field Type	Legal Values	Notes
<b>Thrombolytic Treatment</b>	IV tPA at this hospital	Was IV tPA initiated for this patient at this hospital?	Numeric # = 1-digit	1 - Yes; 0 - No	
	Date and time of IV tPA	--/--/----	MMDDYYYY		If IV tPA was initiated at this hospital or ED, please complete this section:
		__:__	Time HHMM		
		Date Not documented or unknown	Numeric # = 1-digit	1 - Yes; 0 - No	
		Time Not documented or unknown			
<b>Complications of thrombolytic therapy</b>	Complications of Thrombolytic Therapy	Complication of thrombolytic therapy	Numeric # = 1-digit	0 – None; 1 –symptomatic ICH within 36 hours (< 36 hours) of tPA; 2 - life threatening, serious systemic hemorrhage within 36 hours of tPA; 3 - other serious complications; 9 – Unknown/Unable to Determine	
<b>Documented past medical history of any of the following:</b>	Past Medical History	Is there a history of Atrial Fib/Flutter	Numeric # 1-digit	1 - Yes; 0 - No	
<b>Early Antithrombotics</b>	Antithrombotic therapy by end of hospital day 2	Was antithrombotic therapy received by the end of hospital day 2?	Numeric # 1-digit	1 - Yes; 0 - No; 2 - NC	
<b>Dysphagia Screening</b>	Dysphagia screening	Was patient screened for dysphagia prior to any oral intake, including food, fluids or medications?	Numeric # 1-digit	1 – Yes; 0 - No or ND; 2 - NC - a documented reason for not screening exists in the medical record	

Hawaii Stroke Database Elements					
Item	Data Elements	Text Prompt	Field Type	Legal Values	Notes
<b>VTE Prophylaxis</b>	VTE prophylaxis date	What date was the initial VTE prophylaxis administered?	__/__/____	Date MMDDYYYY	
<b>Date of discharge from hospital</b>	Discharge Date	__/__/____	Date MMDDYYYY		
<b>Clinical diagnosis related to stroke that was ultimately responsible for this admission (check only one item)</b>	Final clinical diagnosis related to stroke	Subarachnoid hemorrhage	Numeric ## 1-digit	1 - Yes; 0 - No	Check only one item
		Intracerebral hemorrhage			
		Ischemic stroke			
		Transient ischemic attack			
		Stroke not otherwise specified			
	CAE	Was patient admitted for the sole purpose of performance of a carotid intervention?	Numeric # = 1-digit	1 - Yes; 0 - No or UTD	
<b>Functional status at discharge</b>		Was Modified Rankin Scale done at discharge?	Numeric # 1-digit	1 - Yes; 0 - No/ND	

Hawaii Stroke Database Elements					
Item	Data Elements	Text Prompt	Field Type	Legal Values	Notes
	mRSS at discharge	Modified Rankin Scale Score	Numeric # 1-digit	0 - No symptoms; 1 - no significant disability despite symptoms; 2 slight disability; 3 - moderate disability, can walk without assistance; 4 - moderate to severe disability, needs assistance to walk; 5 - severe disability, bedridden; 6 - death	
	Ambulatory status at discharge	Was patient ambulating at the end of hospital day 2?		1 - Yes; 0 - No/ND	
<b>Atrial Fibrillation</b>	Anticoagulation for atrial fibrillation	If a history of atrial fibrillation/flutter or PAF is documented in the medical history or if the patient experienced atrial fibrillation/flutter or PAF during this episode of care, was patient prescribed anticoagulation medication upon discharge?	Numeric # 1-digit	1 - Yes; 0 - No/ND; 2 - NC	
<b>Antithrombotics at Discharge</b>	Antithrombotics at discharge	Was antithrombotic (antiplatelet or anticoagulant) medication prescribed at discharge?	Numeric # = 1-digit	1 - Yes; 0 - No/ND; 2 - NC	

Hawaii Stroke Database Elements					
Item	Data Elements	Text Prompt	Field Type	Legal Values	Notes
		If patient was discharged on an antithrombotic medication, was it an antiplatelet?	Numeric # = 1-digit	1 - Yes; 0 - No/ND	antiplatelet medications include aspirin, aspirin/dipyridamol, clopidogrel, ticlopidine, others
		If patient was discharged on an antithrombotic medication, was it an anticoagulant?	Numeric # = 1-digit		anticoagulant medications include heparin IV, full dose LMW heparin, warfarin, dabigatran, argatroban, fondaparinux, rivaroxaban, apixaban, lepirudin, others
<b>Rehabilitation</b>	Rehabilitation services	Is there documentation in the record that the patient was assessed for or received rehabilitation services?	Numeric # 1-digit	1 - Yes; 0 - No	