COLORADO
Health Facilities & Emergency Medical Services Division
Department of Public Health & Environment

Emergency Medical and Trauma Services Branch

2018

Stroke Advisory Board Legislative Report

January – December 2018

Submitted to the Colorado Legislature by the

Emergency Medical and Trauma Services Branch

Health Facilities and Emergency Medical Services Division

Colorado Department of Public Health and Environment

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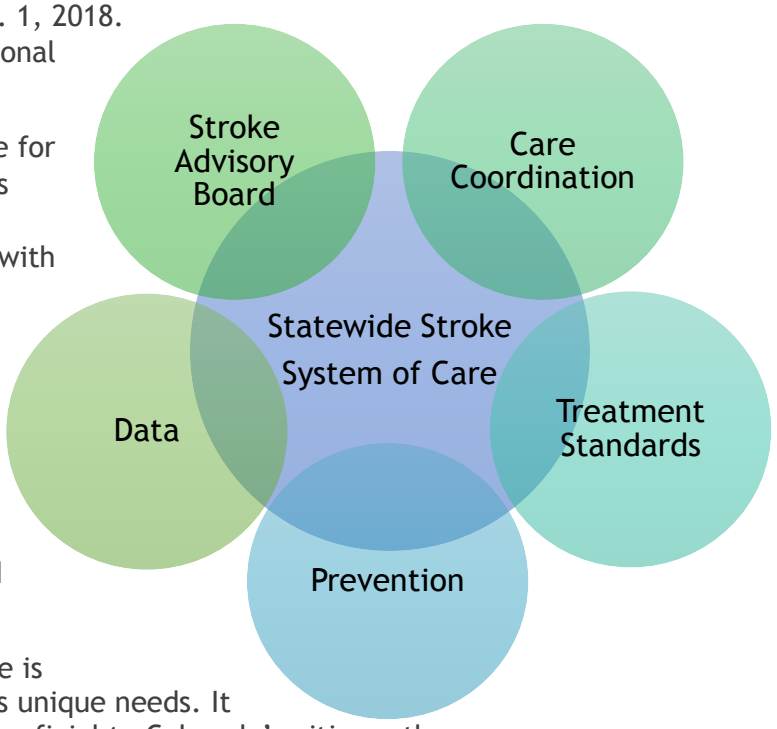
Table of Contents

Executive Summary

The Stroke Advisory Board is a governor-appointed board that makes recommendations to the legislature each January on how to improve stroke care in Colorado. 25-3-115 C.R.S originally created the board in 2013 with a sunset date Sept. 1, 2018. In May 2018, the board was extended for an additional 10 years.

The board recommends a statewide system of care for stroke that addresses the full continuum of care as well as local, regional and statewide resources to support the system. In 2018, the board partnered with communities and experts in prevention and health equity to inform recommendations and collaborate on shared initiatives.



The board's recommendation for a statewide system includes five different elements, each essential to its overall function. Recommendations formed over several years include input from diverse regions in Colorado and other states.

The proposed model for a statewide system of care is comprehensive and customized to meet Colorado's unique needs. It has the potential to be more cost effective and beneficial to Colorado's citizens than other existing state systems of care for stroke. This model addresses the full continuum of care which includes acute, rehabilitative and preventive care by partnering with public health initiatives that are improving health equity across Colorado. This report contains the board's recommendations and addresses legislative implications.

Recommendations for a Statewide System of Care for Stroke

The board recommends a statewide system of care for stroke that is facilitated by the Colorado Department of Public Health and Environment (the department). The board continues to oppose state designation of stroke centers because it would be duplicative and require extensive resources. The recommendation for a statewide system of care includes the following elements.

1. A statewide system that includes support for facilities that are not nationally certified as a stroke center.
2. The Stroke Advisory Board will continue making recommendations to the legislature and act as a resource for facilities, agencies and Regional Emergency Medical and Trauma Advisory Councils (RETACs).
3. Care coordination at the local and statewide level by connecting facilities, agencies, RETACs, the Stroke Advisory Board and the department.
4. Minimum treatment standards that help facilities meet evidence-based guidelines for the different levels of stroke care.
5. Prevention efforts to improve risk factor management and early recognition of stroke.
6. Data collection, analysis and feedback for quality improvement purposes.

Background

On May 24, 2013, Gov. John Hickenlooper signed 25-3-115, C.R.S. into law and it was revised in May 2018 to extend the Stroke Advisory Board until Sept. 1, 2028. This legislation formed and instructed the Stroke Advisory Board to make recommendations to improve stroke care in Colorado by addressing the following issues.

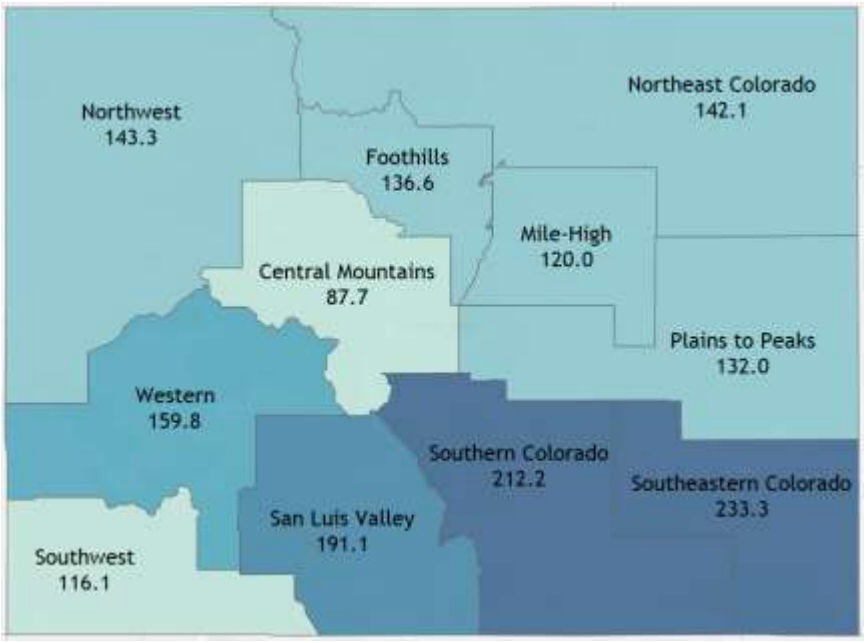
- Whether stroke designation is necessary to ensure quality care
- Rural and urban care coordination
- Treatment and prevention of stroke using evidence-based practice
- State database or registry
- Public access to aggregated data

The board is made up of 18 governor-appointed members and one ex-officio member from the Colorado Department of Public Health and Environment. A description of the board's membership is listed in 25-3-115, C.R.S., located in Appendix 7. Board members who contributed to this annual report are listed in Appendix 5. Meetings are facilitated by the Colorado Department of Public Health and Environment.

In May 2017, the legislature adopted Senate Joint Resolution 17-027, located in Appendix 6, which recognized the need to expand access to effective stroke care through education and support for providers. Members of the Stroke Advisory Board found that the resolution aligned with the legislation that directs the work of the Stroke Advisory Board. The map below illustrates the varying impact stroke has on each of Colorado's 11 Regional Emergency Medical and Trauma Advisory Councils (RETACs). The need and access to resources is a key factor in developing recommendations that meet Colorado's unique needs.

Stroke Advisory Board meeting information and materials can be found online at www.colorado.gov/pacific/cdphe/stroke-advisory-board.

Map1 Rate of Colorado Residents Diagnosed With Ischemic Stroke in 2016 per 100,000 by RETAC



This data was taken from hospital discharge data and analyzed by the Colorado Department of Public Health and Environment EMTS Data Section. Ischemic strokes were identified by using The Joint Commission code tables. Darker shading indicates a higher rate of stroke.

Introduction

Acute stroke treatment is time-sensitive requiring early recognition, intervention and rehabilitative care to improve outcomes. In Colorado and the nation, stroke continues to be the leading cause of disability and among the top five causes of death. In 2017, there were 1,980 deaths from cerebrovascular disease accounting for 5.2 percent of all deaths in Colorado.[1] An ischemic stroke is a blockage of a blood vessel that prevents blood flow in the brain. In 2017, 88 percent of ischemic stroke patients in Colorado survived, were treated in a hospital and received additional care to address disability or impairment. See Chart 1. A hemorrhagic stroke occurs when a blood vessel ruptures, causing bleeding in or around the brain. In 2017, 73 percent of hemorrhagic stroke patients in Colorado survived,were treated in a hospital and received additional care to address disability or impairment. See Chart 2. The impact of stroke is not unique to Colorado. According to the Centers for Disease Control, the decrease in deaths due to stroke has slowed since 2013. However, Colorado is one of 22 states where mortality rates are rising. [2] In the United States, the total stroke-related medical costs are expected to more than double between 2015 and 2035 from $36.7 billion to $94.3 billion. [3]

The board has worked to develop an exemplary system of care model for stroke that provides sustainable quality improvement, targets support to facilities that need it the most, and empowers facilities to provide excellent care in the communities they serve without overburdening facilities, agencies or state resources. Special attention is given to the potential costs to the citizens of Colorado, stroke survivors, facilities and agencies. While the board's recommendations are customized to Colorado's unique needs, this model has gained popularity and attention from several other states.

The extension of the board for an additional ten years provides time for the board to continue to collaborate with Colorado's communities to act as a resource and refine recommendations to the legislature. Public partners are an integral part of the board's efforts and recommendations.

This report outlines the foundation and infrastructure of a system of care for stroke with details on the ideal function of a voluntarily-driven system focused on delivering the best possible care to each stroke patient in Colorado.

Chart 1 Ischemic stroke survivors in 2017 received additional care after leaving the hospital.

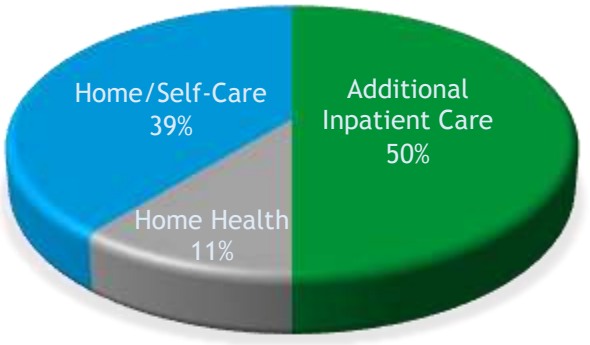
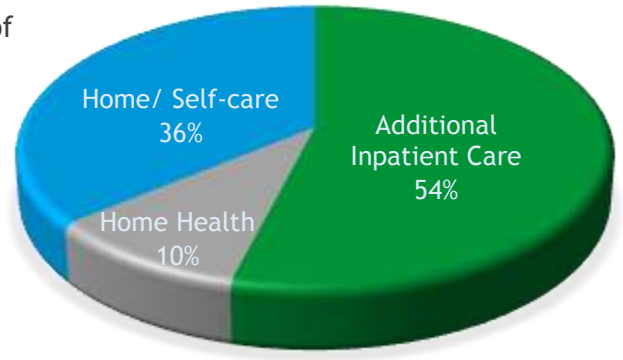


Chart 2 Hemorrhagic stroke survivors in 2017 received additional care after leaving the hospital.

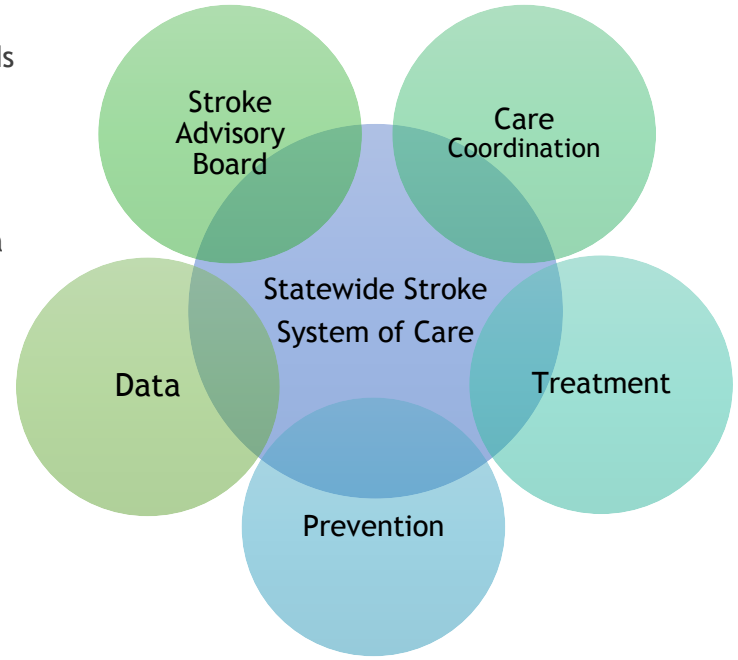


Charts 1 and 2 reflect hospital discharge data analyzed by the Colorado Department of Public Health and Environment, Emergency Medical and Trauma Services Data Section using the Joint Commission code tables for stroke.

[1] Colorado Health Information Dataset (CoHID) http://www.cohid.dphe.state.co.us/
[2]Centers for Disease Control https://www.cdc.gov/vitalsigns/stroke/infographic.html#graphic
[3] American Stroke Association https://www.heart.org/-/media/data-import/downloadables/heart-disease-and-stroke-statistics-2018---at-a-glance-ucm_498848.pdf

1. Statewide System of Care for Stroke

Currently, there is no formal statewide system of support for stroke in Colorado. The board recommends that the Colorado Department of Public Health and Environment (the department) facilitate a system of care that incorporates support for facilities that are not nationally certified as a stroke center. The board will continue to explore an appropriate platform for a voluntary system of care.



Recommendations for a Statewide System of Care for Stroke	Legislative Implications
A system of support should be established that is voluntary and incorporates facilities that are not certified as a stroke center. The board recommends the following aspects as essential to meet the needs of a sustainable system of care in Colorado.	
Implement the recommendations for the coordination of stroke care for facilities, agencies, the Stroke Advisory Board and the department at the local, regional and statewide level, as outlined in the Care Coordination section of this report. This recommendation does not change the responsibility or autonomy that RETACs, EMS or facilities have over the services they provide.	None
Allow facilities that meet the recommended treatment standards, outlined in the Treatment section, to be part of the voluntary system of care for stroke. The board would provide support to help facilities meet treatment standards and integrate into the system to improve access to care across Colorado. Nationally certified stroke centers already meet or exceed the recommended treatment standards.	None
Implement a process for data collection, analysis and reporting as detailed in the Data section of this report. Failure to report data would limit the board's ability to provide quality improvement guidance until data could be reviewed. Data presented to the board would be aggregated to assure facility and patient information would not be identifiable. The board is opposed to punitive action for facilities that choose not to participate in the system of care.	The department would need to be granted statutory authority and resources to receive, review and report data.

1. Statewide System of Care for Stroke

2018 Activities

Previously, the board recommended expanding the existing recognition program to provide the infrastructure for a voluntary system of care for stroke. However, after further discussion the board subsequently revised this recommendation to remove the expansion of recognition as the platform for the system of care.

- Defining the landscape of the system of care for stroke in Colorado.
  - 73 percent of Colorado's landscape is rural according to Colorado Rural Health.[4] While rural facilities have low stroke patient volumes, a significant number of patients present to a facility that does not have the infrastructure that nationally certified centers have. Rural facilities are isolated from other healthcare resources. Therefore, the board finds it beneficial to focus on support for rural facilities in order to improve the system of care for stroke across Colorado.
  - Nationally certified stroke centers are essential to the success of the system of care for stroke. These facilities have robust resources, participate in quality improvement, comply with strict criteria and treat high volumes of stroke. These facilities also provide expert consultation and education to rural facilities. Most of these facilities are located along the front-range and urban areas.
- Defining components of a system of care.
  - Facilities that are not nationally certified as a stroke center are essential to the system of care for stroke. Many rural facilities do not participate in national certification due to low patient volumes or onerous costs. A statewide system of support would need several components to be successful and sustainable. The board sought input from rural facility administration and provider representatives to determine what components would be essential and what parameters would be appropriate, which are summarized below.
    - ✓ Department facilitation and ongoing expertise from the Stroke Advisory Board would be necessary to support a system of care. This is detailed in the Stroke Advisory Board section.
    - ✓ Care coordination describes the relationships between different partners and creates a cycle for the continuum of care and quality improvement, detailed in the Care Coordination section.
    - ✓ Treatment standards have been developed over the past four years and continue to be revised to be reasonable and necessary to meet evidence-based practice. Additional details can be found in the Treatment Standards section of this report.
    - ✓ Data reporting and analysis would need to be as streamlined as possible and focused on improvement initiatives. Facilities that are not reporting to a national stroke registry are collecting data at the facility level but are not able to perform robust quality improvement and do not have benchmarking capabilities. Details on recommended data metrics, sources of the information and the intended use of data at the facility and state level can be found in the Data Registry section.

[4] Colorado Rural Health Center http://coruralhealth.wpengine.netdna-cdn.com/wp-content/uploads/2013/10/2017.1.4-Snapshot-FINAL-FINAL.pdf

2. Recommendations for the Stroke Advisory Board

The revisions to 25-3-115, C.R.S. and Senate Joint Resolution 17-027 created new opportunities for the Stroke Advisory Board. In 2018, the board began strategic planning to address issues identified from gap analyses performed between 2014 and 2018, explore gaps and needs in Colorado's communities, identify and utilize resources to support implementation of voluntary efforts to improve the system of care, and continue to provide the legislature with recommendations in an annual report. The board supports recommendations that involve voluntary participation.

Recommendations for the Stroke Advisory Board	Legislative Implications
The board recommends the following efforts be included in its scope of work.	
Act as a resource for facilities, agencies and regions as requested by: • Reviewing literature and providing guidance on best-practices. • Providing tool-kits, templates and other resources to help hospitals and EMS agencies meet evidence-based guidelines for stroke treatment.	None
Define changes to the function, responsibility or membership of the Stroke Advisory Board. • Edit the primary care physician seat to include advanced practice practitioners and remove the board certification listed because currently, there are no board certifications that match the description in the legislation. • Add a representative from the Regional Medical Director's group • Add a representative from an EMS agency • Add a representative from a private insurer	Legislation would be required to modify the membership.
Review de-identified and facility-blinded data for system and facility level quality improvement.	Data collection and review would require direction, enabling legislation and resources.
Make recommendations for quality improvement initiatives for the stroke system of care utilizing data.	

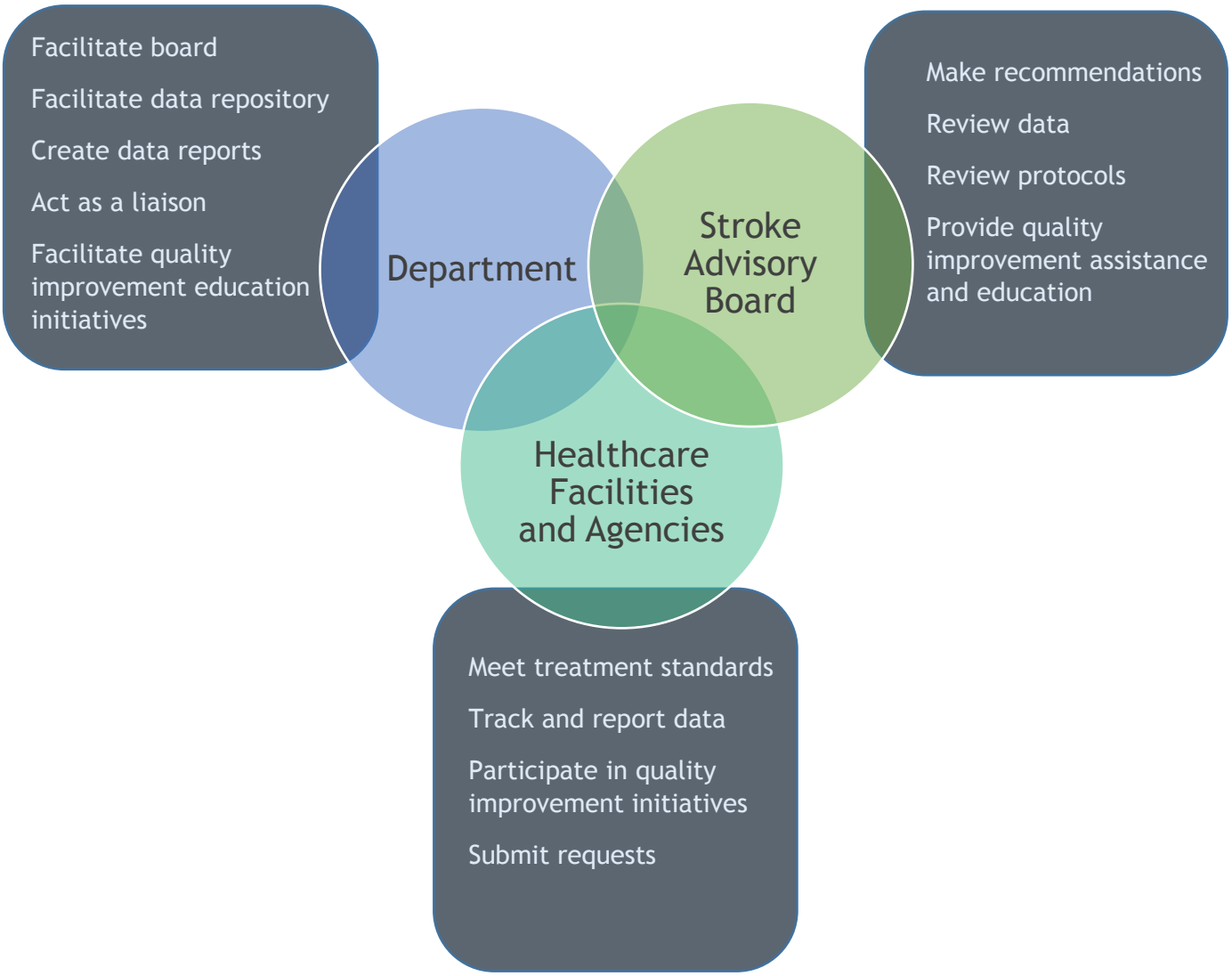
Future Priorities for the Stroke Advisory Board

- Provide resources to help facilities and agencies meet evidence-based practices.
- Develop stroke prevention and treatment quality improvement initiatives.
- Identify universal principles for stroke care that are evidence-based and applicable to Colorado as a whole, regardless of geography or organizational restrictions.

2. Recommendations for the Stroke Advisory Board

Stroke Advisory Board's Role in Statewide Quality Improvement

The diagram below illustrates the recommended collaborative interaction between facilities, agencies, the department and the Stroke Advisory Board.



This recommendation has been refined over several years and continues to be central to a functional and sustainable system of care. Other states utilize advisory boards to provide the necessary expertise to help facilitate the system of care.

3. Recommendations for Care Coordination

The board recognizes gaps in the continuum of care and the need for statewide organization to meet the unique challenges in rural vs. urban areas including education, access to expertise, resource utilization, communication between EMS and hospitals, and efficient triage processes. The following recommendations are customized for each of Colorado's Regional Emergency Medical and Trauma Advisory Councils (RETACs) to address its unique needs. The board intends for the Colorado Department of Public Health and Environment (the department) to facilitate a system of care with expertise and support from the Stroke Advisory Board to accomplish the following recommendations.

Recommendations for EMS and Hospital Care Coordination	Legislative Implications
The board will provide assistance as needed and recommends RETACs revise stroke protocols to include:	
• A specified stroke assessment tool- Current recommendation is BE FAST (Balance Eyes Face Arms Speech Time). • A specified stroke severity assessment tool- Current recommendation is FAST ED (Field Assessment Stroke Triage for Emergency Destination). • A stroke alert protocol that includes: > Notification from the field of a stroke alert based on prehospital provider assessment and clinical judgement. > Notification from the field of a stroke alert, with a last known well date and time. > Obtaining contact information at the scene for communication with a patient representative, e.g., a family member.	None
The board will provide assistance as needed and recommends RETACs revise stroke triage guidelines.	
The board recommends the department include stroke service availability on the EMResource platform to improve communication and aid in triage decisions. The board will develop a proposal for the department to review.	None
Regional stroke triage guidelines should include: • Assessing eligibility for different types of treatment. • Identifying appropriate modes of transportation. • Specifying criteria for emergent transport. • Avoiding unnecessary bypass and multiple transfers.	None
Develop methods to collect and share data that encourage process improvement between EMS and hospitals including:	
• Timely reporting of EMS stroke data to the receiving facility. • Timely and appropriate feedback to prehospital providers for each stroke patient. An example of a feedback template is included in Appendix 2.	None
To improve communication between hospitals and increase access to expert consultation, the board recommends that hospitals utilize existing and explore new HIPAA compliant communication methods to improve access to expert consultation. Some currently available resources include telestroke, Picture Archiving and Communication System (PACS), video or phone consultation.	

3. Recommendations for Care Coordination

Recommendations for Hospital and Community Care Coordination	Legislative Implications
The board recommends a discharge process that is intended to help providers better connect stroke survivors with the appropriate resources after discharge. The post-acute discharge plan should include:	
• A current functional score and a functional outcome goal using a validated assessment. • A care plan for current rehabilitative needs and continued reassessment. • Patient, family and caregiver education on: > The stroke continuum of care, current status and the next goal. > Rehabilitation progression expectations. > Fall prevention. > Prevention of secondary impairment and disability. > Proper use of equipment that improves mobility. > Monitoring and addressing mental and emotional health issues as they arise. > Caregiver burden, self-care and support. > Referrals for appropriate resources available in the stroke survivor's community.	None
The board recommends establishing partnerships with policy development organizations in efforts to improve insurance reimbursement for services that align with best-practices and to expand access to non-traditional rehabilitation services.	
Hands-on therapeutic services which legislation has already improved with insurance payment for locum tenens providers and national programs that provide loan repayment for providers serving rural areas. Legislation and policy efforts could also focus on incentives for: • Inpatient and outpatient rehabilitation services that meet national best-practice guidelines for restorative and adaptive rehabilitation. • Patient-centered rehabilitation services as recommended by physicians and rehabilitation experts. • Traveling providers to serve rural areas. • Loan repayment programs at the state level for providers serving rural areas.	None
Technology options which legislation has already improved with insurance payment for telehealth services. Other legislative and policy efforts could focus on insurance payment for: • Therapeutic activity assignment and monitoring through smart device applications. • Rehabilitation treatment sessions via telemedicine facilitated by web conferencing.	None
The Stroke Advisory Board will continue building partnerships with the following organizations for equitable healthcare access and policy development efforts.	
• Colorado Department of Health Care Policy and Financing • Colorado Department of Health and Human Services • Commercial payers	None

3. Recommendations for Care Coordination

Future Priorities

- Develop a 2019 schedule for the Stroke Advisory Board to connect with RETACs and medical directors.
- Establish relationships with facilities by:
  - > Developing a plan to connect with stroke coordinators in Colorado.
  - > Developing a plan to connect with stroke representatives at facilities that are not nationally certified as a stroke center.
- Develop a process for stakeholders to connect with the Stroke Advisory Board.
- Develop an online resource to access tool kits and recommendations, hosted by the department.
- Develop quality improvement models that address the full continuum of care.

2018 Activities

- Evaluate stroke assessment and stroke severity assessment tools.
  - > The board reviewed new evidence for stroke identification and severity assessment tools. Current evidence supports Field Assessment Stroke Triage for Emergency Destination (FAST ED) as an easy-to-use, accurate tool for identifying stroke. The board encourages agencies to consider this scale if a transition to a new scale is already being considered. However, the board also acknowledges evidence that accuracy in identifying stroke is more dependent on provider competency with an assessment tool and less on which assessment tool is used. Thus, the board encourages providers and educators to maintain consistency in order to improve competency with a tool that best matches the skill level of the providers performing assessments. Changes in assessment tool use is associated with time and costs for education. Colorado has diverse regions with significant variation in what personnel and equipment are available to transport and treat stroke patients. Also, there is significant variation in Colorado's topography, geography and climate that complicates transportation. Assessment tools to identify stroke and assess severity can be found in Appendix 1.
  - > The board met with the Regional Medical Directors (RMD) group in May to discuss recent changes in best-practice guidelines. Specific topics the RMD requested include tools to recognize different types of stroke and treatment timelines for different types of stroke to inform triage and transport. The board agreed to continue communicating with EMS in a variety of venues in the future. The board also agreed that providing assistance as needed to medical directors in assessment tool selection, eduction and triage plan revisions will be a future priority.
- Assess rehabilitation resources for stroke.
  The department does not have access to a comprehensive directory of rehabilitation resources. Initial efforts involved case managers from high-volume, nationally certified stroke centers providing lists of rehabilitation resources. Members found the referral lists included services in mostly urban areas. This prompted the board to invite guest speakers from the Colorado Department of Public Health and Environment, Prevention Services Division and the Office of Health Equity to address issues with access to care and risk factor management.
- Improve hospital communication of stroke service availability.
  The recommendation to utilize EMResource as a platform to communicate stroke services is consistent with its use for disaster management and trauma services in Colorado. Other states are using this platform for stroke and other emergent conditions. EMS representatives on the board and in the community expressed how essential it is for EMS to be aware of current service availability to properly triage and transport patients. The board determined this is the most efficient and appropriate tool for communication and will develop a proposal for the EMResource platform to present to the department. The board will address the following topics

to draft that proposal in collaboration with the Regional Emergency Medical and Trauma Advisory Councils (RETACs).
  - Determine what nomenclature to use for stroke services.
  - Develop clear and standardized terminology to represent service availability and how the term availability is defined. The definition should align with national guidelines.
- Develop appropriate triage and transport guidelines for stroke.
  The board tabled recommendations for triage until after the implementation of stroke assessment and stroke severity assessment education for EMS providers.
- Increase access to expert consultation.
  The board is concerned with costs associated with telemedicine and the need for other sustainable options. Rural providers should have the capability to utilize unbiased partners to help manage stroke-specific care.

4. Recommendations for Treatment

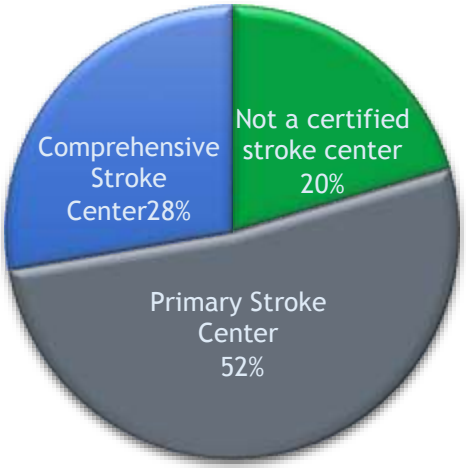
Each year, the board revises the recommended minimum standards for different types of facilities to align with evidence-based guidelines. Facilities that are nationally certified meet or exceed the recommended standards. The recommendations are intended to be beneficial for facilities that are not nationally certified. The recommendations are vetted by rural hospital representatives to ensure the minimum standards are reasonable, helpful and effective.

Recommendations for Treatment of Stroke	Legislative implications
For facilities that do not have IV thrombolytic capabilities:	
• Educate community to recognize stroke symptoms and call 911. • Educate staff to recognize signs and symptoms of stroke. • Promote the use of a standardized stroke assessment tool, such as the NIHSS. • Have an emergency transfer plan that includes destination options and patient representative contact information (e.g., a family member). • Have a plan for quality monitoring and improvement. • Have a plan to connect stroke survivors returning to the community with services and/or equipment per best-practice guidelines before hospital discharge.	None
For facilities that can treat acute ischemic stroke with IV thrombolytic therapy but do not provide inpatient care for stroke patients, include all previous criteria and:	
• Create a facility-defined response plan for prehospital notification of stroke developed in conjunction with emergency medical services to expedite care from facility arrival to brain imaging, interpretation and treatment in the most efficient manner for: > Stroke alerts within the facility-defined IV thrombolytic therapy treatment window. > Stroke alerts outside of the facility-defined IV thrombolytic therapy treatment window. • Have IV thrombolytic therapy readily available. • Have brain imaging readily available for interpretation and expert consultation. • Have a plan for access to expert consultation (i.e., in person, by phone, by telestroke, etc.). • Have a goal for door to IV thrombolytic therapy time consistent with national best-practices.	None

Chart 3 In 2016, 7,275 patient records include treatment for ischemic stroke at the following types of facilities:

In 2016, there were 2157 hemorrhagic stroke encounters.

In 2016, roughly 3.5% of all ischemic stroke patient records received thrombectomy, an evidence-based treatment linked with improved outcomes.



This data was taken from the Emergency Department and Hospital Discharge Dataset and analyzed by the Colorado Department of Public Health and Environment EMTS Data Section. Strokes were identified using The Joint Commission code tables.

4. Recommendations for Treatment

Recommendations for Treatment of Stroke (continued)	Legislative implications
For facilities that treat, admit or transfer ischemic stroke patients, include all previous criteria and:	
• Develop a formal protocol for feedback to EMS on stroke patient outcomes, agreed upon by the hospital, EMS and RETAC. See Appendix 2 for an example of common feedback elements. • Provide inpatient rehabilitation services: > Perform physical, occupational and speech therapy evaluations to determine impairments and rehabilitative needs for all stroke survivors. > Develop a multidisciplinary care plan to address current impairments, outline the expected progression through the rehabilitation continuum of care and make recommendations for treatment after discharge. > Incorporate the stroke survivor, family and caregiver(s) into the care team as early as possible. > Arrange for access to equipment that improves mobility and protects the patient from further impairment (i.e., wheelchairs, splints, orthotics, etc.). > Perform or schedule a needs assessment of the home before discharge. > Define a discharge plan for stroke survivors that includes: ✓ A current functional score and a goal using a hospital-defined validated functional assessment tool. ✓ A multidisciplinary care plan for current and future rehabilitative needs. ✓ Patient, family and caregiver education on: • The stroke continuum of care, current status and the next goal. • Rehabilitation progression expectations. • Fall prevention. • Prevention of secondary impairment and disability. • Proper use of equipment that improves mobility. • Monitoring and addressing mental and emotional health issues as they arise. • Caregiver burden, self-care and support. • Referrals for appropriate resources available in the stroke survivor's community.	None

4. Recommendations for Treatment

Recommendations for Treatment of Stroke (continued)	Legislative implications
For facilities that provide endovascular services, all previous criteria apply and:	
• Adopt a time for door-to-recanalization that is consistent with national best-practices. • Develop a scope of care explaining the clinical platform for endovascular services including staffing, equipment and education. • Ensure 24/7/365 capability or a plan to communicate the following with EMS and partner hospital(s): > Schedule of endovascular service availability. > Changes in the schedule for endovascular service availability. • Provide education on early recognition and prevention as follows: > Early stroke recognition and calling 911. > Stroke assessment and stroke severity assessment for prehospital providers. > NIH stroke scale certification for hospital professionals.	None

Future Priorities

- Develop tool kits and resources that are available online for facilities to utilize.
- Develop a pilot project to test toolkits and standards.

2018 Activities

Each year, the board refines the recommended minimum treatment standards to help facilities meet evidence-based practices in stroke treatment. Revisions in 2018 were in response to new information on endovascular services, a dynamic field with rapid changes in evidence-based practice. The board agreed to add a priority to provide guidance to meet the recommended treatment standards for rural facilities with limited resources and for whom national certification is too onerous. Rural facility representatives vetted the recommendations for treatment standards.

5. Recommendations for Prevention

The board is taking an innovative approach to bridge the gaps in the continuum of care. These gaps have been identified in multiple systems of care in many states. To address these issues, the board is partnering with experts in prevention and community based healthcare to develop a comprehensive, evidence-based plan that addresses the full continuum of care. This is a new recommendation in 2018 and is expected to complete a cyclical continuum of care for stroke.

Recommendations for Prevention of Stroke	Legislative implications
The board recommends expanding prevention efforts to focus on high survival rates and emphasize timely treatment to increase quality of life, decrease impairment and reduce disability. The Stroke Advisory Board will partner with existing organizations to advance and continue to adapt prevention programs to meet evidence-based practices.	
• Efforts should address: > Early stroke recognition and calling 911 > Risk factor management in the clinical and community settings that includes but is not limited to the following: ✓ Hypertension ✓ Hyperlipidemia ✓ Diabetes ✓ Smoking ✓ Atrial fibrillation ✓ Other heart conditions ✓ Anticoagulation	None

Future Priorities

The board will continue to partner with the organizations described below to advance the recommended initiatives.

- Work with the Colorado Department of Public Health and Environment, Prevention Services Division on shared initiatives for risk factor management.
- Partner with Colorado Hospital Association to disseminate educational information to hospitals.
- Partner with other healthcare organizations to provide education for facilities, providers and patients in efforts to improve outcomes.
- Connect with local media and television writers to incorporate awareness for stroke. Heart attack incorporation into the media was a successful public health campaign.

5. Recommendations for Prevention

2018 Activities

Prevention and recovery are increasing priorities for multiple systems of care. In 2017, the board explored prevention and rehabilitation models in the United States and other countries. While the board found helpful tools and models, gaps during transitions in care continued to be a theme across geographic areas. Prevention, acute care and recovery continue to function in silos. To bridge these gaps, the board invited experts in prevention and community healthcare to learn about best-practices. This innovative approach began with guest speakers introducing the board to public health paradigms, programs, historical lessons and future efforts. The following activities were integral to developing the current recommendations.

- Representatives from the Colorado Department of Prevention Services Division were invited as guest speakers to share information on public health activities.
  - > VISION (Visual Information System for Identifying Opportunities and Needs) was introduced, an online interactive mapping tool for multiple health conditions by region, county and demographic makeup in Colorado. The information used to develop these infographics differs from the hospital discharge data the board is familiar with in that it is based on the Behavioral Risk Factor Surveillance System (BRFSS). BRFSS data is self-reported information collected through telephone survey and adjusted for population based on census data. This information sparked the board's interest in developing a map of Colorado to represent stroke-specific information using the hospital discharge data and The Joint Commission code tables for stroke. See Map 1 on page 6.
  - > Community programs for home blood pressure monitoring and cholesterol management are intended to better manage risk factors. The board added a future priority to partner in efforts to incorporate these programs in the hospital setting.
  - > Utilization of pharmacists in rural areas to provide education on correct medication dosing and potential interactions to improve compliance.
  - > Health Navigators are being positioned in the community setting to better educate the public on risk factor management. A shared initiative will be to incorporate these professionals into the hospital setting. This would help bridge the hospital discharge transition by linking patients with appropriate resources in the community.
- The board also invited a representative from the Colorado Office of Health Equity to discuss incentives for providers that practice in rural areas.
  - > One presentation discussed the history and process to understanding how to effectively improve access to care in rural areas. A new evidence-based model is helping funnel resources into programs that are effective long-term in improving rural community primary services.
  - > Another presentation discussed a data warehouse that links several sources of provider information to develop a catalogue of resources for needs assessment, surveys and appropriately targeted messaging.

[5] American Heart Association https://www.heart.org/-/media/data-import/downloadables/heart-disease-and-stroke-statistics-2018---at-a-glance-ucm_498848.pdf

6. Recommendations for a Data Registry

Meaningful data, reporting and analysis are essential for quality improvement. Some of the recommendations below improve the Colorado Department of Public Health and Environment's (the department) access to data. The board has been utilizing hospital discharge data, which is limited in that it does not have stroke-specific measures of interest and it is 18 months or more in arrears. Department resources clean and analyze each data report for the Stroke Advisory Board in order to glean meaningful information on stroke. The recommendations for meaningful data collection below provide a foundation that is applicable to the current landscape of stroke care and makes quality improvement at the facility and system level possible for rural facilities.

Recommendations for a Data Registry	Legislative implications
The board recommends a statewide system of support with a mechanism for data-driven quality improvement. Facilities that choose to participate in the system would report data and in turn, would have access to support from the Stroke Advisory Board for quality improvement initiatives. At any facility's request for assistance, the department would provide facility and patient blinded data to the board for review and development of recommendations. Failure to report data would limit the Stroke Advisory Board's ability to provide meaningful feedback. In order to perform quality improvement, the board recommends the department have access to analyze and develop reports with the following prehospital, hospital and rehabilitation stroke data.	
Data that nationally certified stroke centers are already reporting to a national stroke database. This would provide facilities a way to access the Stroke Advisory Board for quality improvement assistance. In 2017, the cost for the department to access that national registry was about $2000 annually. This recommendation would not add a burden to these facilities. See the measures of interest in Appendix 3, Table 1.	The department would need to be granted statutory authority and resources to access data, create reports, and provide reports for the board to review.
Develop a limited dataset with a template for data collection and validation for facility level quality improvement for facilities that are not certified as a stroke center. Also, the department would develop a data repository as a method for facilities to share the limited data elements with the department and the Stroke Advisory Board for quality improvement assistance. See the measures of interest in Appendix 3, Table 2.	
Rehabilitation data could be entered into the limited data repository mentioned above by facilities that provide rehabilitation services. See the measures of interest in Appendix 3, Table 3.	
Prehospital data specific to stroke is already available to the department. See the EMS data measures of interest in Appendix 3, Table 4.	None
System level information is already available to the department. See the measures of interest in Appendix 3, Table 5.	None

Future Priorities

- Explore ways to gather and analyze meaningful data to which the department does not currently have access.
- Gather information on the number of Colorado hospitals participating in a stroke registry.
- Develop a template for data collection and validation for facilities not utilizing a registry.
- Collect feedback on data measures and potential reporting methods.

6. Recommendations for a Data Registry

2018 Activities

The board reviewed ICD-10 data using The Joint Commission code tables for stroke. This provided much more meaningful data than the board has been able to review in the past. This expanded the board's information gathering on the landscape of stroke in Colorado. The board's work on the 2018 priorities is outlined below.

- The board identified meaningful information that is not available or to which the department does not have access.
  - National best-practice guidelines did not provide a clear goal for the proportion of patients to treat with thrombolytic medication or thrombectomy.
  - Evidence-based guidelines did not provide a clear estimate of the proportion of ischemic stroke that are due to a large vessel occlusion.
  - The department does not have the ability to assess the proportion of patients treated with thrombolytic medication and correlate that proportion with the proliferation of stroke centers.
  - The department does not have access to stroke registry data that contains information to determine the percent of times thrombolytic medication is administered for eligible stroke patients in Colorado.
  - The department does not currently have information to determine the number of patients with ischemic and hemorrhagic stroke treated definitively at nationally certified stroke centers and at facilities that are not nationally certified as a stroke center.
  - The department does not have access to stroke registry data that would provide the ability to compare the difference in door to needle times among facilities with varying involvement in a telestroke network.
  - The department does not have access to valid or reliable data on the racial and ethnic landscape for stroke in Colorado. This would be beneficial information in identifying health equity disparities.
- The board discussed the importance of facility-level data collection and state-level access to data for quality improvement. Quality improvement requires facility-level data collection and analysis. State-level access is necessary for benchmarking and statewide efforts.
  - Facilities that are nationally certified as a stroke center are already participating in quality improvement and benchmarking. The board will continue to explore efficient and reasonable methods for facilities that are not nationally certified as a stroke center to collect and analyze data for quality improvement purposes.
  - Rural facility representatives provided feedback that the recommended data measures are already collected and there is interest in quality improvement and benchmarking. A future priority is to explore the following options for data collection, analysis and quality improvement.
    - ✓ Expand reporting to the Get-With-The-Guidelines Stroke registry. There has been an increase in participation among facilities that are not nationally certified as a stroke center.
    - ✓ Develop a state repository for a limited data set. The board will build a template for data collection, quality improvement and benchmarking. Additional state resources would be required to develop a state repository, facilitate a reporting method, analyze data and help facilitate the board's quality improvement efforts.
    - ✓ Explore the ability to provide recommended stroke-specific measures for the Hospital Transformation Program or its successor organization.

7. Recommendations for Public Access to Data

The board acknowledges that health literacy is a barrier to risk factor management, recognition of stroke and appropriate response to stroke. The board considered what data may be helpful in addressing these issues.

Recommendations for Public Access to Data	Legislative implications
At this time, the board does not recommend public access to stroke data. Currently, stroke-specific metrics do not appear to be meaningful or beneficial for public reporting purposes. The board supports continuing to partner with prevention services and public health experts for public outreach, education, health navigation initiatives and to improve health literacy.	None

Future Priorities

- Consider educational efforts on evidence-based practices that improve risk factor management and decrease stroke incidents.
- Evaluate what data would support public health initiatives to manage risk factors, identify and seek timely treatment for stroke, and support treatment across the continuum of care.

2018 Activities

In 2018, the board changed how data would be presented. Messaging was changed to emphasize stroke survivability rather than mortality. The general public should be approached with information that shows stroke is survivable and treatment is time-sensitive. Timely treatment is important to prevent further brain damage and outcomes are improved with immediate activation of EMS when signs and symptoms of a stroke occur.

The board also reviewed what data might be beneficial for the purpose of public reporting. The board found that most data that is currently available is accessed by public health professionals. Stroke-specific metrics that are available are difficult to analyze, interpret, and thus do not appear to be meaningful or beneficial for public reporting purposes.

Appendix 1: Stroke Assessment Tools

The following tables include assessment tools the board reviewed in 2018. The recommended stroke assessment is FAST ED, Field Assessment Stroke Triage for Emergency Destination. However, other assessment tools may be more appropriate in different regions in Colorado due to provider level or competency with another assessment tool.

Stroke Assessment Tools
CPSS- Cincinnati Prehospital Stroke Scale
LAPSS- Los Angeles Prehospital Stroke Screen
MASS- Melbourne Ambulance Stroke Screen
Med PACS- Medic Prehospital Assessment for Code Stroke
OPSS- Ontario Prehospital Stroke Screening Tool
FAST ED- Field Assessment Stroke Triage for Emergency Destination
ROSIER- Recognition of Stroke in the Emergency Room

Stroke Severity Assessment Tools
CPSS- Cincinnati Prehospital Stroke Scale
FAST ED- Field Assessment Stroke Triage for Emergency Destination
G-FAST- Gaze + FAST
LAMS- Los Angeles Motor Scale
PASS- Prehospital Acute Stroke Severity Scale
RACE- Rapid Arterial Occlusion Evaluation Scale
VAN- Vision, Aphasia, Neglect assessment
3-Item Stroke Scale

Appendix 2: Hospital Feedback Template

Suggested elements for hospital feedback to EMS
Date of incident
EMS agency
Provider identifier
Patient gender
Patient birth date
Last known well
Stroke assessment tool
Stroke severity assessment tool
Prehospital notification y/n
NIH stroke score
Diagnosis and interventions
Door to needle time
Door to interventional radiology
Diagnostic images
Discharge disposition
Patient outcome
Additional comments
Discuss best-practices

Appendix 3: Data Tables

Table 1 lists measures that facilities are already reporting to a national stroke registry and the Colorado Department of Public Health and Environment (the department) would be able to access through a superuser account. The department does not have access to this information.

Measure	Definition
Demographics: DOB	Patient date of birth
Demographics: Sex	Patient gender
Mode of arrival	Mode of transport to facility of record
Door to IV needle time for: • all patients treated with alteplase • patients treated with alteplase and a final diagnosis of ischemic stroke	Arrival to bolus of IV alteplase, No Drip and Ship Arrival to bolus of IV alteplase
Percent of eligible patients receiving IV alteplase	Ischemic patients that arrive in 3.5 hours and are treated in 4.5 hours from symptom onset
Percent of patients receiving IV alteplase with a final diagnosis stroke	All patients receiving IV alteplase
Door in to door out time (hospital arrival to transfer)	ED arrival to EMS departure for higher level of care
30 day readmit (all causes)	All patients discharged with a final diagnosis of ischemic stroke
Percent of patients achieving TICI 2b perfusion or better	Grade 0: No perfusion Grade 1: Antegrade reperfusion past the initial occlusion, but limited distal branch filling with little or slow distal reperfusion Grade 2a: Antegrade reperfusion of less than half of the occluded target artery previously ischemic territory (e.g., in 1 major division of the MCA and its territory) Grade 2b: Antegrade reperfusion of more than half of the previously occluded target artery ischemic territory (e.g., in 2 major divisions of the MCA and their territories) Grade 3: Complete antegrade reperfusion of the previously occluded target artery ischemic territory, with absence of visualized occlusion in all distal branches
Percent of patients with symptomatic intracranial hemorrhage	Symptomatic intracranial hemorrhage after IV alteplase defined as hemorrhage on follow-up scan and a 4 point increase in NIH within 36 hours from treatment.
Door to groin puncture	Arrival to groin puncture (patient fully prepped, draped and ready for the intra-arterial procedure)
Door to final IA recanalization time	Arrival to greatest recanalization in the primary occluded vessel

Appendix 3: Data Tables

Table 2 lists measures for facilities that do not provide inpatient stroke services. The department does not have access to this information.

Measure	Definition
Date	Patient arrival
Demographics: DOB	Patient date of birth
Demographics: Sex	Patient gender
Alteplase eligible	Arrive within 3.5 hours and treated in 4.5 hours of symptom onset, no comorbidities
Arrival time	Emergency Department arrival
Mode of arrival	Mode of transport to facility of record
IV alteplase given	Yes or No
Door to IV alteplase needle time	Time from Emergency Department arrival to bolus of IV alteplase, No Drip and Ship
Discharge disposition	Where did the patient go after leaving facility of record
Receiving facility code	Choose from facility ID code list
Door out time	EMS departure from facility of record
Final diagnosis	ICD-10

Table 3 lists measures for facilities that provide rehabilitation services. The department does not have access to this information.

Measure	Definition
Date	Patient arrival
Demographics: DOB	Patient date of birth
Demographics: sex	Patient gender
Functional measure	G-Code or other facility defined functional measure

Table 4 lists measures reported by EMS. The department does have access to this information from most agencies.

Measure	Definition
Date	Date of transport
Demographics: DOB	Patient date of birth
Demographics: Sex	Patient gender
Arrival at scene	EMS arrival on scene
First medical contact	EMS arrival to patient
Last Known Well	Estimated date/time patient was last known to be in their usual state of health, reported by patient, family or bystander.
Stroke alert from field	Hospital notification of stroke from the field

Table 5 lists system information

Measure	Definition
Number of certified stroke centers	Nationally certified stroke centers in CO
Percentage of stroke patients treated at a certified stroke center	$\frac{\text{Number of patients treated at certified stroke centers}}{\text{Total number of stroke patients in CO}}$

Appendix 4: Datasets Analyzed in 2018

Colorado Hospital Association Discharge Datasets (inpatient data)

This database gives a general idea of what stroke care looks like in Colorado. This dataset includes almost all hospitals in Colorado except several rural hospitals that see low patient volumes and very few stroke patients. This is an informative database but is of limited use for quality improvement, as it is an administrative database. It does not show all patient procedures, treatments or other relevant clinical information. Additionally, this data will consistently be many months in arrears.

Emergency Medical Services Dataset (EMS data)

This data set contains prehospital care trip reports for most patients transported by EMS agencies in Colorado. The system was upgraded in 2018 and provides more meaningful stroke data. Currently, there are 67 required data elements whereas the new dataset contains over 250 data elements. Agencies are increasingly reporting those additional data elements.

BRFSS (Behavioral Risk Factor Surveillance System)

This is a national system that collects information on health-related topics. The information is self-reported by telephone survey. Each year, information is gathered from more than 400,000 adults in all 50 states, the District of Columbia and three U.S. territories.

Appendix 5: Stroke Advisory Board Members

Jeanne-Marie Bakehouse
Franktown
Term expires 08-01-19
CDPHE designee - ex officio

Christy Casper, AG-ACNP, Co-chair
Centennial
Term expires 08-01-19
Expert in stroke database management

Robert Enguidanos, MD
Windsor
Term expires 08-01-19
Primary care physician

Joseph Foecking, PT, Chair
Colorado Springs
Term expires 08-01-20
Stroke rehabilitation facility

Donald Frei Jr., MD
Denver
Term expires 08-01-20
Interventional neuroradiologist

Cindy Giullian ACNP- BC
Denver
Term expires 08-01-19
Urban area hospital administrator

Jessica Ann Hannah, MD
Bayfield
Term expires 08-01-20
Board-certified neurologist serving rural patients

Kathryn Henneman, OTR/L
Loveland
Term expires 08-01-20
Occupational therapist involved in stroke care

Rick Morris O.D., F.C.O.V.D.
Golden
Term expires 08-01-20
Member of the public who has suffered a stroke

Judd Jensen, MD
Denver
Term expires 08-01-20
Statewide association of physicians

William Joseph Jones, MD
Denver
Term expires 08-01-19
Board-certified vascular neurologist

Lorence Leaming, DHA, FACHE
Estes Park
Term expires 08-01-19
Administrator from a rural hospital

Katarzyna Mastalerz, MD
Denver
Term Expires 08-01-19
Primary care physician involved in stroke care

David Scott Miner, MD
Denver
Term expires 08-01-19
Statewide chapter of emergency physicians

Robyn Moore
Evergreen
Term expires 08-01-20
Representative of a national stroke association

Shaye Moskowitz, MD
Colorado Springs
Term expires 08-01-21
Board-certified neurosurgeon

Richard Smith, MD
Denver
Term expires 08-01-20
Resident and member of a stroke association

John Savage, CMPE, PMP
Greenwood Village
Term expires 08-01-19
Representative of a statewide hospital association

Jason Schallenberger, Paramedic
Colorado Springs
Term expires 08-01-19
Emergency medical service provider

Robyn Moore
Evergreen
Term expires 08-01-20
Representative of a national stroke association

Wesley Reynolds, MD
Denver
Term expires 08-01-21
Rural area board-certified neurologist

Michelle Whaley, RN
Castle Rock
Term expires 08-01-19
RN involved in stroke care

Appendix 6: Senate Joint Resolution

2017

SENATE JOINT RESOLUTION 17-027

BY SENATOR(S) Guzman and Tate, Aguilar, Baumgardner, Cooke, Coram, Court, Crowder, Donovan, Fenberg, Fields, Garcia, Gardner, Hill, Holbert, Jahn, Jones, Kagan, Kefalas, Kerr, Lambert, Lundberg, Marble, Martinez Humenik, Merrifield, Moreno, Neville T., Priola, Scott, Smallwood, Sonnenberg, Todd, Zenzinger, Grantham;
also REPRESENTATIVE(S) Duran and Beckman, Arndt, Becker J., Becker K., Benavidez, Bridges, Buck, Buckner, Carver, Catlin, Coleman, Covarrubias, Danielson, Esgar, Everett, Exum, Foote, Garnett, Ginal, Gray, Hamner, Hansen, Herod, Hooton, Humphrey, Jackson, Kennedy, Kraft-Tharp, Landgraf, Lawrence, Lebsock, Lee, Leonard, Lewis, Liston, Lontine, Lundeen, McKean, McLachlan, Melton, Michaelson Jenet, Mitsch Bush, Navarro, Neville P., Nordberg, Pabon, Pettersen, Rankin, Ransom, Rosenthal, Saine, Salazar, Sias, Singer, Thurlow, Valdez, Van Winkle, Weissman, Willett, Williams D., Wilson, Winter, Wist, Young.

CONCERNING RECOGNITION OF THE NEED TO EXPAND ACCESS TO EFFECTIVE TREATMENT FOR STROKE PATIENTS.

WHEREAS, Strokes are a leading cause of death and long-term disability in the United States, costing more than 130,000 lives annually, including an average of 1,600 victims in Colorado alone; and

WHEREAS, A stroke can affect anyone at any age and at any time and can have devastating long-term effects if the victim is not treated immediately; and

WHEREAS, A stroke occurs when blood flow to an area of the brain is blocked by a clot or aneurysm, but certain specialized care has been proven to give stroke patients an excellent chance of survival and even full recovery; and

WHEREAS, Advancements in medical innovation have produced revolutionary treatments such as the tissue plasminogen activator and

Appendix 6: Senate Joint Resolution

neuroendovascular surgery in which highly trained stroke surgeons, in conjunction with neurologists, treat patients suffering from a severe form of ischemic stroke by removing or dissolving the blood clot and ensuring the patients' survival while greatly reducing long-term disabilities; and

WHEREAS, When emergency medical technicians (EMTs) and other first responders are properly trained to assess stroke severity and then transport stroke patients to neuroendovascular-ready stroke centers capable of performing a mechanical thrombectomy twenty-four hours per day, seven days per week, 365 days per year (24/7/365), stroke patients who undergo neuroendovascular surgery can live up to five years longer than patients who do not receive this specialized treatment, while also saving up to up to $23,000 over their lifetime from shorter hospital stays and fewer required therapies; and

WHEREAS, Only an estimated 10% of those stroke victims who would benefit from this specialized care are currently being properly assessed, triaged, and transported to these specialized 24/7/365 neuroendovascular-ready stroke centers to receive this lifesaving treatment; now, therefore,

Be It Resolved by the Senate of the Seventy-first General Assembly of the State of Colorado, the House of Representatives concurring herein:

That we, the Colorado General Assembly:

(1) Hereby recognize and applaud the significant progress being made by Colorado's medical community, including physicians, nurses, EMTs, and hospitals, to embrace new, effective treatments for stroke victims, including specialized care that involves the performance of neuroendovascular surgery;

(2) Continue our support of improvements for the emergency medical response time and transport of stroke victims for appropriate medical care because we believe this type of care is an urgent priority and recognize that further efforts are needed to improve these services;

(3) Strongly encourage the Department of Public Health and Environment to provide EMTs and first responders with the tools needed

Appendix 6: Senate Joint Resolution

for the proper pre-hospital assessment and triage of stroke patients, which may include education about identifying stroke patients who may have an emergent large vessel occlusion that would necessitate transport to 24/7/365 neuroendovascular-ready stroke centers and for which geographic considerations can be designated by regional emergency medical services entities; and

(4) Encourage EMTs and other first responders to receive the proper education and training for the assessment and triage of stroke patients, along with being familiarized with 24/7/365 neuroendovascular-ready stroke centers and the Colorado Community College System to incorporate such education and training curricula into its existing program for the education and training of EMTs and other first responders so that this needed education and training is readily available.

Be It Further Resolved, That copies of this Joint Resolution be sent to Dr. Larry Wolk, Executive Director and Chief Medical Officer of the Colorado Department of Public Health and Environment; the nine members of the Colorado Community College System's State Board for

PAGE 3-SENATE JOINT RESOLUTION 17-027

Appendix 6: Senate Joint Resolution

Community Colleges and Occupational Education; Governor John Hickenlooper; and Colorado's Congressional delegation.

Kevin J. Grantham
PRESIDENT OF
THE SENATE

Crisanta Duran
SPEAKER OF THE HOUSE
OF REPRESENTATIVES

Effie Ameen
SECRETARY OF
THE SENATE

Marilyn Eddins
CHIEF CLERK OF THE HOUSE
OF REPRESENTATIVES

PAGE 4-SENATE JOINT RESOLUTION 17-027

Appendix 7: Stroke Advisory Board Legislation

NOTE: The governor signed this measure on 5/24/2013.

SENATE BILL 13-225

BY SENATOR(S) Giron, Guzman, Aguilar, Newell, Nicholson, Carroll, Heath, Kefalas, Todd, Morse;
also REPRESENTATIVE(S) Ginal and Primavera, Schafer, Fields, Garcia, Hamner, Hullinghorst, Kraft-Tharp, Labuda, Rosenthal, Ryden, Vigil, Young.

CONCERNING THE DEVELOPMENT OF A SYSTEM TO IMPROVE QUALITY OF CARE TO PATIENTS SUFFERING SPECIFIED ACUTE INCIDENTS, AND, IN CONNECTION THEREWITH, MAKING AN APPROPRIATION.

Be it enacted by the General Assembly of the State of Colorado:

SECTION 1. In Colorado Revised Statutes, **add** 25-3-114, 25-3-115, and 25-3-116 as follows:

25-3-114. STEMI task force - creation - membership - duties - report - repeal. (1) (a) THERE IS HEREBY CREATED IN THE DEPARTMENT THE STEMI TASK FORCE. NO LATER THAN AUGUST 1, 2013, THE GOVERNOR SHALL APPOINT FIFTEEN MEMBERS TO THE TASK FORCE AS FOLLOWS:

(I) ONE MEMBER WHO IS A COLORADO RESIDENT REPRESENTING A NATIONAL ASSOCIATION WHOSE GOAL IS TO ELIMINATE CARDIOVASCULAR DISEASE AND STROKE;

(II) ONE MEMBER WHO IS A CARDIOLOGIST PRACTICING IN THIS STATE;

(III) ONE MEMBER WHO IS AN INTERVENTIONAL CARDIOLOGIST PRACTICING IN THE WESTERN SLOPE AREA OF THE STATE;

(IV) ONE MEMBER WHO IS AN INTERVENTIONAL CARDIOLOGIST PRACTICING IN THE FRONT RANGE AREA OF THE STATE;

(V) ONE MEMBER REPRESENTING A STATEWIDE ASSOCIATION OF CARDIOLOGISTS;

(VI) ONE MEMBER REPRESENTING A STATEWIDE ASSOCIATION OF PHYSICIANS;

(VII) ONE MEMBER REPRESENTING A STATEWIDE HOSPITAL ASSOCIATION;

(VIII) ONE MEMBER REPRESENTING AN EMERGENCY PHYSICIANS ASSOCIATION;

(IX) ONE MEMBER WHO IS AN EMERGENCY MEDICAL SERVICE PROVIDER, AS DEFINED IN SECTION 25-3.5-103 (8);

(X) ONE MEMBER WHO IS A REGISTERED NURSE INVOLVED IN CARDIAC CARE;

(XI) ONE HOSPITAL ADMINISTRATOR FROM A HOSPITAL LOCATED IN A RURAL AREA OF THE STATE;

(XII) ONE HOSPITAL ADMINISTRATOR FROM A HOSPITAL LOCATED IN AN URBAN AREA OF THE STATE;

(XIII) ONE MEMBER OF THE PUBLIC WHO HAS SUFFERED A STEMI HEART ATTACK; AND

(XIV) TWO MEMBERS WITH EXPERTISE IN CARDIOVASCULAR DATA REGISTRIES, ONE OF WHOM IS A CARDIOLOGIST.

PAGE 2-SENATE BILL 13-225

Appendix 7: Stroke Advisory Board Legislation

(b) THE EXECUTIVE DIRECTOR OF THE DEPARTMENT OR THE EXECUTIVE DIRECTOR'S DESIGNEE SHALL SERVE AS AN EX OFFICIO MEMBER OF THE TASK FORCE.

(c) MEMBERS OF THE TASK FORCE SERVE WITHOUT COMPENSATION AND ARE NOT ENTITLED TO REIMBURSEMENT OF EXPENSES INCURRED IN SERVING ON OR PERFORMING DUTIES OF THE TASK FORCE.

(2) (a) THE TASK FORCE SHALL STUDY AND MAKE RECOMMENDATIONS FOR DEVELOPING A STATEWIDE PLAN TO IMPROVE QUALITY OF CARE TO STEMI PATIENTS. IN CONDUCTING THE STUDY, THE TASK FORCE SHALL EXPLORE THE FOLLOWING ISSUES, WITHOUT LIMITATION:

(I) CREATION OF A STATE DATABASE OR REGISTRY CONSISTING OF DATA ON STEMI CARE THAT MIRRORS THE DATA HOSPITALS SUBMIT TO NATIONALLY RECOGNIZED ORGANIZATIONS;

(II) ACCESS TO AGGREGATED STEMI DATA, WHICH MUST EXCLUDE ANY IDENTIFYING OR CONFIDENTIAL INFORMATION ABOUT THE REPORTING HOSPITAL OR PATIENTS TREATED BY THE HOSPITAL, FROM A STATE DATABASE THAT MAY BE DEVELOPED OR FROM A NATIONALLY RECOGNIZED ORGANIZATION;

(III) A PLAN THAT WOULD ENCOURAGE RURAL AND URBAN HOSPITALS TO COORDINATE SERVICES FOR THE NECESSARY REFERRAL OR RECEIPT OF PATIENTS REQUIRING STEMI CARE IN THE STATE; AND

(IV) THE CRITERIA USED BY NATIONALLY RECOGNIZED BODIES FOR DESIGNATING A HOSPITAL IN STEMI CARE AND WHETHER A DESIGNATION IS APPROPRIATE OR NEEDED TO ASSURE ACCESS TO THE BEST QUALITY CARE FOR COLORADO RESIDENTS WITH STEMI EVENTS.

(b) BY JANUARY 31, 2014, THE TASK FORCE SHALL SUBMIT AN INITIAL REPORT, AND BY JULY 31, 2015, THE TASK FORCE SHALL SUBMIT ITS FINAL REPORT, SPECIFYING ITS FINDINGS AND RECOMMENDATIONS TO THE HEALTH AND HUMAN SERVICES COMMITTEE OF THE SENATE, THE HEALTH, INSURANCE, AND ENVIRONMENT COMMITTEE OF THE HOUSE OF REPRESENTATIVES, OR THEIR SUCCESSOR COMMITTEES, AND THE DEPARTMENT. THE TASK FORCE SHALL INCLUDE IN ITS REPORTS A RECOMMENDATION ON WHETHER A DESIGNATION OF A HOSPITAL IN STEMI

CARE IS APPROPRIATE OR NEEDED TO ASSURE ACCESS TO THE BEST QUALITY CARE FOR COLORADO RESIDENTS WITH STEMI EVENTS.

(3) THE DEPARTMENT MAY ACCEPT AND EXPEND, SUBJECT TO APPROPRIATION BY THE GENERAL ASSEMBLY, GIFTS, GRANTS, AND DONATIONS TO PAY THE DIRECT EXPENSES OF THE DEPARTMENT IN ASSISTING AND STAFFING THE TASK FORCE. THE DEPARTMENT SHALL TRANSMIT ANY MONETARY GIFTS, GRANTS, OR DONATIONS IT RECEIVES TO THE STATE TREASURER FOR DEPOSIT IN THE HEALTH FACILITIES GENERAL LICENSURE CASH FUND, AND THOSE MONEYS MAY BE USED ONLY TO PAY THE DIRECT EXPENSES OF THE DEPARTMENT.

(4) AS USED IN THIS SECTION, UNLESS THE CONTEXT OTHERWISE REQUIRES:

(a) "DEPARTMENT" MEANS THE DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT.

(b) "STEMI" MEANS ST-ELEVATION MYOCARDIAL INFARCTION.

(5) THIS SECTION IS REPEALED, EFFECTIVE AUGUST 1, 2015.

25-3-115. Stroke advisory board - creation - membership - duties - report - repeal. (1) (a) THERE IS HEREBY CREATED IN THE DEPARTMENT THE STROKE ADVISORY BOARD, THE PURPOSE OF WHICH IS TO EVALUATE POTENTIAL STRATEGIES FOR STROKE PREVENTION AND TREATMENT AND DEVELOP A STATEWIDE NEEDS ASSESSMENT IDENTIFYING RELEVANT RESOURCES. NO LATER THAN AUGUST 1, 2013, THE GOVERNOR SHALL APPOINT EIGHTEEN MEMBERS TO THE STROKE ADVISORY BOARD AS FOLLOWS:

(I) SIX PHYSICIANS WHO ARE ACTIVELY INVOLVED IN STROKE CARE AND WHO SATISFY THE FOLLOWING CRITERIA: ONE PHYSICIAN WHO IS BOARD-CERTIFIED IN PRIMARY CARE; ONE PHYSICIAN WHO IS BOARD-CERTIFIED IN VASCULAR NEUROLOGY; ONE PHYSICIAN WHO IS PRIVILEGED AND ACTIVELY PRACTICING INTERVENTIONAL NEURORADIOLOGY; ONE PHYSICIAN WHO IS BOARD-CERTIFIED IN NEUROSURGERY; ONE PHYSICIAN REPRESENTING A STATEWIDE CHAPTER OF EMERGENCY PHYSICIANS; AND ONE PHYSICIAN WHO IS A BOARD-CERTIFIED NEUROLOGIST SERVING PATIENTS IN A RURAL AREA OF THE STATE;

(II) ONE MEMBER REPRESENTING A STATEWIDE ASSOCIATION OF PHYSICIANS;

(III) ONE MEMBER REPRESENTING A STATEWIDE HOSPITAL ASSOCIATION;

(IV) ONE MEMBER WHO IS AN EMERGENCY MEDICAL SERVICE PROVIDER, AS DEFINED IN SECTION 25-3.5-103 (8);

(V) ONE MEMBER WHO IS A REGISTERED NURSE INVOLVED IN STROKE CARE;

(VI) ONE HOSPITAL ADMINISTRATOR FROM A HOSPITAL LOCATED IN A RURAL AREA OF THE STATE;

(VII) ONE HOSPITAL ADMINISTRATOR FROM A HOSPITAL LOCATED IN AN URBAN AREA OF THE STATE;

(VIII) ONE REPRESENTATIVE FROM A STROKE REHABILITATION FACILITY;

(IX) ONE MEMBER WHO IS A COLORADO RESIDENT REPRESENTING A NATIONAL ASSOCIATION WHOSE GOAL IS TO ELIMINATE CARDIOVASCULAR DISEASE AND STROKE;

(X) ONE MEMBER WHO IS A COLORADO RESIDENT REPRESENTING A NATIONAL STROKE ASSOCIATION;

(XI) ONE MEMBER WHO IS A PHYSICAL OR OCCUPATIONAL THERAPIST ACTIVELY INVOLVED IN STROKE CARE;

(XII) ONE MEMBER OF THE PUBLIC WHO HAS SUFFERED A STROKE OR IS THE CAREGIVER OF A PERSON WHO HAS SUFFERED A STROKE; AND

(XIII) ONE MEMBER WHO IS AN EXPERT IN STROKE DATABASE MANAGEMENT.

(b) THE EXECUTIVE DIRECTOR OF THE DEPARTMENT OR THE EXECUTIVE DIRECTOR'S DESIGNEE SHALL SERVE AS AN EX OFFICIO MEMBER OF THE STROKE ADVISORY BOARD.

PAGE 5-SENATE BILL 13-225

Appendix 7: Stroke Advisory Board Legislation

(c) MEMBERS OF THE STROKE ADVISORY BOARD SERVE WITHOUT COMPENSATION AND ARE NOT ENTITLED TO REIMBURSEMENT OF EXPENSES INCURRED IN SERVING ON OR PERFORMING DUTIES OF THE ADVISORY BOARD.

(2) (a) THE STROKE ADVISORY BOARD SHALL STUDY AND MAKE RECOMMENDATIONS FOR DEVELOPING A STATEWIDE PLAN TO IMPROVE QUALITY OF CARE FOR STROKE PATIENTS. IN CONDUCTING THE STUDY, THE STROKE ADVISORY BOARD SHALL EXPLORE THE FOLLOWING ISSUES, WITHOUT LIMITATION:

(I) CREATION OF A STATE DATABASE OR REGISTRY CONSISTING OF DATA ON STROKE CARE THAT MIRRORS THE DATA HOSPITALS SUBMIT TO NATIONALLY RECOGNIZED ORGANIZATIONS;

(II) ACCESS TO AGGREGATED STROKE DATA, WHICH MUST EXCLUDE ANY IDENTIFYING OR CONFIDENTIAL INFORMATION ABOUT THE REPORTING HOSPITAL OR PATIENTS TREATED BY THE HOSPITAL, FROM A STATE DATABASE THAT MAY BE DEVELOPED OR FROM A NATIONALLY RECOGNIZED ORGANIZATION BY THE ADVISORY BOARD, BY ANY PERSON WHO SUBMITS A WRITTEN REQUEST FOR THE DATA;

(III) EVALUATION OF CURRENTLY AVAILABLE STROKE TREATMENTS AND THE DEVELOPMENT OF RECOMMENDATIONS, BASED ON MEDICAL EVIDENCE, FOR WAYS TO IMPROVE STROKE PREVENTION AND TREATMENT;

(IV) A PLAN THAT WOULD ENCOURAGE RURAL AND URBAN HOSPITALS TO COORDINATE SERVICES FOR THE NECESSARY REFERRAL OR RECEIPT OF PATIENTS REQUIRING STROKE CARE IN THE STATE; AND

(V) THE CRITERIA USED BY NATIONALLY RECOGNIZED BODIES FOR DESIGNATING A HOSPITAL IN STROKE CARE AND WHETHER A DESIGNATION IS APPROPRIATE OR NEEDED TO ASSURE ACCESS TO THE BEST QUALITY CARE FOR COLORADO RESIDENTS WITH STROKE EVENTS.

(b) BY JANUARY 31, 2014, AND BY EACH JANUARY 1 THEREAFTER, THE STROKE ADVISORY BOARD SHALL SUBMIT A REPORT SPECIFYING ITS FINDINGS AND RECOMMENDATIONS TO THE HEALTH AND HUMAN SERVICES COMMITTEE OF THE SENATE, THE HEALTH, INSURANCE, AND ENVIRONMENT COMMITTEE OF THE HOUSE OF REPRESENTATIVES, OR THEIR SUCCESSOR COMMITTEES, AND THE DEPARTMENT. THE STROKE ADVISORY BOARD SHALL

PAGE 6-SENATE BILL 13-225

INCLUDE IN ITS REPORT A RECOMMENDATION ON WHETHER A DESIGNATION OF A HOSPITAL IN STROKE CARE IS APPROPRIATE OR NEEDED TO ASSURE ACCESS TO THE BEST QUALITY CARE FOR COLORADO RESIDENTS WITH STROKE EVENTS.

(3) THE DEPARTMENT MAY ACCEPT AND EXPEND, SUBJECT TO APPROPRIATION BY THE GENERAL ASSEMBLY, GIFTS, GRANTS, AND DONATIONS TO PAY THE DIRECT EXPENSES OF THE DEPARTMENT IN ASSISTING AND STAFFING THE STROKE ADVISORY BOARD. THE DEPARTMENT SHALL TRANSMIT ANY MONETARY GIFTS, GRANTS, OR DONATIONS IT RECEIVES TO THE STATE TREASURER FOR DEPOSIT IN THE HEALTH FACILITIES GENERAL LICENSURE CASH FUND, AND THOSE MONEYS MAY BE USED ONLY TO PAY THE DIRECT EXPENSES OF THE DEPARTMENT.

(4) AS USED IN THIS SECTION, UNLESS THE CONTEXT OTHERWISE REQUIRES, "DEPARTMENT" MEANS THE DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT.

(5) THIS SECTION IS REPEALED, EFFECTIVE SEPTEMBER 1, 2018. PRIOR TO THE REPEAL, THE DEPARTMENT OF REGULATORY AGENCIES SHALL REVIEW THE FUNCTIONS OF THE STROKE ADVISORY BOARD IN ACCORDANCE WITH SECTION 2-3-1203, C.R.S.

25-3-116. Department recognition of national certification - suspension or revocation of recognition - definitions. (1) A HOSPITAL THAT HAS AN ACCREDITATION, CERTIFICATION, OR DESIGNATION IN STROKE OR STEMI CARE FROM A NATIONALLY RECOGNIZED ACCREDITING BODY, INCLUDING BUT NOT LIMITED TO A CERTIFICATION AS A COMPREHENSIVE STROKE CENTER OR PRIMARY STROKE CENTER BY THE JOINT COMMISSION ON ACCREDITATION OF HEALTH CARE ORGANIZATIONS AND PROGRAMS OR ITS SUCCESSOR ORGANIZATION OR AN ACCREDITATION AS A STEMI RECEIVING CENTER OR STEMI REFERRAL CENTER BY THE SOCIETY FOR CARDIOVASCULAR PATIENT CARE OR ITS SUCCESSOR ORGANIZATION, MAY SEND INFORMATION AND SUPPORTING DOCUMENTATION TO THE DEPARTMENT. THE DEPARTMENT SHALL MAKE A HOSPITAL'S NATIONAL ACCREDITATION, CERTIFICATION, OR DESIGNATION AVAILABLE TO THE PUBLIC IN A MANNER DETERMINED BY THE DEPARTMENT.

(2) THE DEPARTMENT SHALL DEEM A HOSPITAL THAT IS CURRENTLY ACCREDITED, CERTIFIED, OR DESIGNATED BY A NATIONALLY RECOGNIZED

ACCREDITING BODY AS SATISFYING THE REQUIREMENTS FOR RECOGNITION AND PUBLICATION BY THE DEPARTMENT. THE DEPARTMENT MAY SUSPEND OR REVOKE A RECOGNITION AND PUBLICATION OF A HOSPITAL'S ACCREDITATION, CERTIFICATION, OR DESIGNATION IF THE DEPARTMENT DETERMINES, AFTER NOTICE AND HEARING IN ACCORDANCE WITH THE "STATE ADMINISTRATIVE PROCEDURE ACT", ARTICLE 4 OF TITLE 24, C.R.S., THAT THE HOSPITAL NO LONGER HOLDS AN ACTIVE ACCREDITATION, CERTIFICATION, OR DESIGNATION FROM A NATIONALLY RECOGNIZED CERTIFYING BODY.

(3) WHETHER A HOSPITAL ATTAINS A NATIONAL ACCREDITATION, CERTIFICATION, OR DESIGNATION IN STROKE OR STEMI CARE HAS NO BEARING ON, OR CONNECTION WITH, THE LICENSING OR CERTIFICATION OF THE HOSPITAL BY THE DEPARTMENT PURSUANT TO SECTION 25-1.5-103 (1) (a).

(4) AS USED IN THIS SECTION, UNLESS THE CONTEXT OTHERWISE REQUIRES:

(a) "DEPARTMENT" MEANS THE DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT.

(b) "STEMI" MEANS ST-ELEVATION MYOCARDIAL INFARCTION.

SECTION 2. In Colorado Revised Statutes, 2-3-1203, **add** (3) (ee.5) as follows:

2-3-1203. Sunset review of advisory committees. (3) The following dates are the dates for which the statutory authorization for the designated advisory committees is scheduled for repeal:

(ee.5) SEPTEMBER 1, 2018:

(II) THE STROKE ADVISORY BOARD CREATED IN SECTION 25-3-115, C.R.S.;

SECTION 3. Appropriation. In addition to any other appropriation, there is hereby appropriated, out of any moneys in the general fund not otherwise appropriated, to the department of public health and environment, for the fiscal year beginning July 1, 2013, the sum of

$41,402 and 0.6 FTE, or so much thereof as may be necessary, for allocation to the emergency preparedness and response division for the stroke and STEMI heart attack designation line item related to the implementation of this act.

SECTION 4. Safety clause. The general assembly hereby finds, determines, and declares that this act is necessary for the immediate preservation of the public peace, health, and safety.

John P. Morse
PRESIDENT OF
THE SENATE

Mark Ferrandino
SPEAKER OF THE HOUSE
OF REPRESENTATIVES

Cindi L. Markwell
SECRETARY OF
THE SENATE

Marilyn Eddins
CHIEF CLERK OF THE HOUSE
OF REPRESENTATIVES

APPROVED _____

John W. Hickenlooper
GOVERNOR OF THE STATE OF COLORADO

PAGE 9-SENATE BILL 13-225

Appendix 7: Stroke Advisory Board Legislation

HOUSE BILL 18-1265

BY REPRESENTATIVE(S) Lontine and Beckman, Buckner, Ginal, Kennedy, Roberts, Esgar, Gray, Hamner, Michaelson Jenet, Valdez, Young; also SENATOR(S) Crowder, Aguilar, Kefalas, Martinez Humenik, Merrifield, Moreno, Tate, Todd, Williams A.

CONCERNING THE CONTINUATION OF THE STROKE ADVISORY BOARD IN ACCORDANCE WITH THE RECOMMENDATION IN THE DEPARTMENT OF REGULATORY AGENCIES' 2017 SUNSET REPORT.

Be it enacted by the General Assembly of the State of Colorado:

SECTION 1. In Colorado Revised Statutes, 25-3-115, **amend** (5) as follows:

25-3-115. Stroke advisory board - creation - membership - duties - report - definition - repeal. (5) This section is repealed, effective ~~September 1, 2018~~ SEPTEMBER 1, 2028. Prior to the repeal, the department of regulatory agencies shall review the functions of the stroke advisory board in accordance with section 2-3-1203, C.R.S.

SECTION 2. In Colorado Revised Statutes, 2-3-1203, **repeal** (7)(a)(II); and **add** (19) as follows:

Capital letters or bold & italic numbers indicate new material added to existing statutes; dashes through words indicate deletions from existing statutes and such material not part of act.

2-3-1203. Sunset review of advisory committees - legislative declaration - definition - repeal. (7) (a) The following statutory authorizations for the designated advisory committees will repeal on September 1, 2018:

(II) ~~The stroke advisory board created in section 25-3-115, C.R.S.~~

(19) (a) THE FOLLOWING STATUTORY AUTHORIZATIONS FOR THE DESIGNATED ADVISORY COMMITTEES WILL REPEAL ON SEPTEMBER 1, 2028:

(I) THE STROKE ADVISORY BOARD CREATED IN SECTION 25-3-115.

(b) THIS SUBSECTION (19) IS REPEALED, EFFECTIVE SEPTEMBER 1, 2030.

SECTION 3. Act subject to petition - effective date. This act takes effect September 1, 2018; except that, if a referendum petition is filed pursuant to section 1 (3) of article V of the state constitution against this act or an item, section, or part of this act within the ninety-day period after final adjournment of the general assembly, then the act, item, section, or part will not take effect unless approved by the people at the general election to be

held in November 2018 and, in such case, will take effect on the date of the official declaration of the vote thereon by the governor.

Crisanta Duran
SPEAKER OF THE HOUSE
OF REPRESENTATIVES

Kevin J. Grantham
PRESIDENT OF
THE SENATE

Marilyn Eddins
CHIEF CLERK OF THE HOUSE
OF REPRESENTATIVES

Effie Ameen
SECRETARY OF
THE SENATE

APPROVED 12:18 PM May 4, 2018

John W. Hickenlooper
GOVERNOR OF THE STATE OF COLORADO

PAGE 3-HOUSE BILL 18-1265