A New System for Statewide Stroke Care in Utah
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Introduction
Stoke is the third leading cause of death in the United States and Utah. Between 2003 and 2007, the Utah mortality rate for stroke was 45.7 deaths per 100,000 population. Stroke is also a leading cause of long-term disability in the U.S. In Utah between 2003 and 2007, a total of 13,024 people visited the hospital for stroke.

Stroke is a medical emergency. People who suffer strokes have a short, three-hour window in which to get to the hospital for certain types of emergency treatment. If patients make it to the hospital within three hours, they may be able to receive a drug that can reduce the clots in the brain causing the stroke and prevent or minimize permanent disability. This three-hour window is crucial, and the Utah Department of Health (UDOH) has been working on public education for years, including recent commissioned TV commercials portraying the five signs of stroke. The goal is to educate the public to call 911 for any of the signs of stroke in order to get treatment started as quickly as possible.

Efficient transportation and effective and timely treatment through a statewide stroke care system are vital to ensure that stroke patients get the best care. This article describes the challenges that Utah faces in developing a statewide stroke care system, explores the concepts in the proposed plan for hospitals and emergency services, and discusses the issues that are inherent in implementing such a system.

Stroke Care Challenges for Utah
Utah’s geographic spread poses particular problems for healthcare emergencies such as stroke. Those living on the Wasatch Front are well provided for by the four Utah Primary Stroke Centers: Intermountain Medical Center in Murray, McKay Dee in Ogden, University of Utah in Salt Lake City, and Utah Valley Regional Medical Center in Provo. These hospitals have been designated as Certified Primary Stroke Centers by the Joint Commission to ensure they meet standards to provide the most sophisticated and comprehensive stroke care, and are well equipped to deal with stroke patients at any time of day or night. They have extensive facilities, equipment, and specialized doctors and nurses to care for stroke patients. Other large hospitals on the Wasatch Front, and throughout the state, are working to achieve this designation, as well.

However, some smaller hospitals may not have the staff, equipment, and facilities to qualify as Primary Stroke Centers. This can cause problems for patients, particularly in rural areas, when the timing of treatment is so critical.

A Statewide Stroke Care System for Utah
In 2007, the Acute Care Subcommittee of the Utah Stroke Task Force began drafting ideas for development of a statewide stroke care system to address these problems. A focus group consisting of Stroke Coordinator Nurses and Stroke Medical Director Physicians, including specialized stroke neurologists from the Primary Stroke Centers and the Medical Director for Utah Department of Health’s Bureau of Emergency Medical Services, began seriously investigating the issues surrounding the development and implementation of a statewide stroke care system. In October 2008, a draft of the plan was presented to the Utah Stroke Task Force Acute Care Subcommittee. This plan has been approved and adopted as best practice.

In January 2010, the Alliance for Cardiovascular Health in Utah: Heart Disease and Stroke Prevention Program will introduce a new statewide stroke care protocol and will invite hospitals to apply for designation as a “Stroke Receiving Facility.” Designation requires hospital staff to undertake specialized education associated with stroke care as well as meeting detailed criteria for standards of care. Members of the Utah Stroke Task Force Acute Care Subcommittee are currently working on development of training materials. Even small hospitals can provide the best available emergency stroke care to the patients they serve if nationally-accepted stroke protocols and standards are followed.

Additionally, all hospitals, even if they choose not to be designated as Stroke Receiving Facilities, will be offered training and protocols on best stroke treatment, and encouraged to use Telestroke or contact a
Primary Stroke Center to assist in giving patients the best level of stroke care possible.

**Utah’s New Stroke Protocol**

Utah is at the forefront of state policy-making that aims to increase the team-work between EMS and hospitals in the state and thus improve the level of care that stroke patients receive. Given the three-hour window for effective treatment of stroke, the objective of the protocol is to elevate the level of care so that a stroke victim can get the best level of care in the quickest time.

The protocol works by creating a “spoke and hub” system for stroke care in Utah. The “hub” hospitals are the designated Joint Commission Certified Primary Stroke Centers listed earlier. The “spoke” hospitals will be designated by the Utah Department of Health (UDOH), Bureau of Emergency Medical Services (BEMS) as “Stroke Receiving Facilities.”

The new protocol directs EMS to take suspected stroke patients directly to a designated Primary Stroke Center or Stroke Receiving Facility, whichever is closer. Sometimes this will mean bypassing other hospitals, which may not be designated as stroke facilities. Patients will be screened by EMS using a standard stroke scale, such as the Cincinnati Pre-Hospital Stroke Scale. EMS will then use a standardized pre-hospital treatment protocol for suspected stroke patients.

The criteria for designation as a Stroke Receiving Facility include having an emergency department open 24/7 and staffed by nurses and doctors trained to treat acute stroke according to nationally-accepted protocols, including the use of thrombolytic agents to dissolve clots when patients meet the strict criteria for these powerful medications. In addition, a hospital must have a CT scan available 24 hours a day with rapid interpretation of the scan by a specialist, a 24 hour laboratory to run critical tests, and a call roster for a stroke specialist available 24 hours a day by phone or through the Telestroke system. Finally, a Stroke Receiving Center must designate a dedicated stroke coordinator who will be responsible for their stroke program, provide education to staff members, and submit reports on their stroke patients regularly to the Department of Health for review to assure that proper protocols and procedures are followed.

Stroke Receiving Facilities are encouraged to keep uncomplicated stroke patients who are improving with their care. More complicated patients, or those who fail to improve, may be transferred to a Primary Stroke Center for further evaluation and treatment. As an additional resource and support, the Primary Stroke Centers are available for consultation at any time during the patient’s hospitalization.

The standardized pre-hospital stroke screening, treatment, and transportation to designated Primary Stroke Centers or Stroke Receiving Facilities with standardized ED protocols will reduce the time it takes to get patients with acute ischemic strokes to the correct treatment. It will also improve the overall care of other stroke patients who may not qualify for this treatment.

**Transportation**

This new system inevitably has implications for emergency medical services (EMS) and the transportation of stroke patients. The protocol has the following guidelines to overcome some of these issues:

- All critical access hospitals (small, rural hospitals) are encouraged to achieve Stroke Receiving Facility status.
- EMS agencies will be encouraged to transport suspected acute stroke patients to designated stroke facilities, if available.
- EMS agencies must develop individual protocols for the most expeditious transport of stroke patients to Primary Stroke Centers or Stroke Receiving facilities with contingencies for time of stroke onset, weather, traffic, and other variables. These transportation plans may involve air transport by medical helicopter.

**Conclusion**

This innovative collaboration between the Alliance for Cardiovascular Health in Utah: Heart Disease and Stroke Prevention Program, UDOH, medical staff, EMS, and hospitals has resulted in the development of a statewide stroke care system. Until now, hospitals and EMS agencies were working in isolation, but collaboration means that the standard of care can be raised for stroke patients throughout the state. Those
served by smaller community hospitals which choose to be designated as Stroke Receiving Facilities will be able to get the same level of emergency stroke care as is available at the larger Primary Stroke Centers. It is hoped that this will decrease deaths and disability due to stroke in Utah. The establishment of this program, the result of hard work and innovative collaboration, will give our state a system of care that is designed to save lives by ensuring that the most efficient and effective means of transportation and treatment is delivered to stroke patients.

The Utah Alliance for Cardiovascular Health (ACHU) is comprised of doctors, representatives from medical associations, nursing associations, insurance reps, and other healthcare organizations such as the American Heart Association and the Association for Utah Community Health.

Interview with ACHU members, July 2009.

Joint Commission Primary Stroke Centers automatically qualify as “Hub” hospitals.