



TeleStroke

Supporting Community Hospitals

Stroke

is the third leading cause of death in the United States and the leading cause of adult disability.

Approximately 795,000 strokes occur each year, and delays in diagnosis contribute to the mortality and disability associated with stroke.

TeleStroke

supports community hospitals by providing:

- 24-hour on-call stroke specialist
- Emergency department acute stroke consultation
- Bedside follow-up (depending on site needs)
- Stroke follow-up appointments (depending on site needs)



WHEN STROKE BEGINS, EVERY SECOND COUNTS

Stroke is a medical emergency that requires early assessment and early treatment. Rapid identification of acute stroke patients enables the timely administration of effective and appropriate stroke therapies that can improve patient outcomes. It also allows for initiation and coordination of strategies to prevent stroke progression, recurrent stroke, and common complications.

In medically underserved areas, limited support of stroke experience is a significant obstacle to rapid diagnosis and treatment of stroke patients who present to the emergency room.

Bring comprehensive stroke care to every patient with TeleStroke.

Using real-time videoconferencing and teleradiology, the TeleStroke program provides 24-hour on-call neurologists to community hospitals to aid in prompt diagnosis and treatment of stroke patients. The TeleStroke program overcomes geographic

and transportation barriers with reliable technology that allows immediate access to stroke experts who can provide consultation with on-site providers to manage acute stroke as needed.

Keep stroke patients close to home.

With TeleStroke, community hospitals can provide stroke care to their patients without the cost of unnecessary transfers. The goal of this innovative program is to keep patients and their health care dollars in the community, where they belong.

The TeleStroke program helps community hospitals to deliver an organized and standardized approach to stroke management based on the most current stroke treatment recommendations. Combined with the innovative use of technology, TeleStroke may help diagnose and facilitate decision-making, improve patient care and reduce health care costs, even in remote health care facilities.

BENEFITS OF TELESTROKE

With the TeleStroke program, local hospitals can expand their range of services to include high quality stroke care for patients within their own communities. By offering specialized stroke services, community hospitals can improve patient outcomes, decrease stroke-related disability, and reduce health care costs, all while keeping more patients close to home.

From the moment a stroke patient presents to the local emergency room, TeleStroke facilitates an effective, integrated system for stroke management by establishing and coordinating strong links among all the fundamental components of stroke care.

Emergency Department Support

Acute stroke treatment with thrombolytics, medications that break down clots, gives stroke patients a 30% better chance of surviving stroke without disability. However, these medications are effective only if given within 3 hours of symptom onset, making emergent diagnosis of stroke a priority in every emergency department.

The narrow therapeutic window for stroke makes the TeleStroke program an essential component of providing excellent

care to patients who present to the emergency department with symptoms that are suspicious for stroke. Studies have reported that telehealth linking a stroke specialist to emergency departments is effective in increasing the number of eligible stroke patients who receive thrombolytic therapy.¹

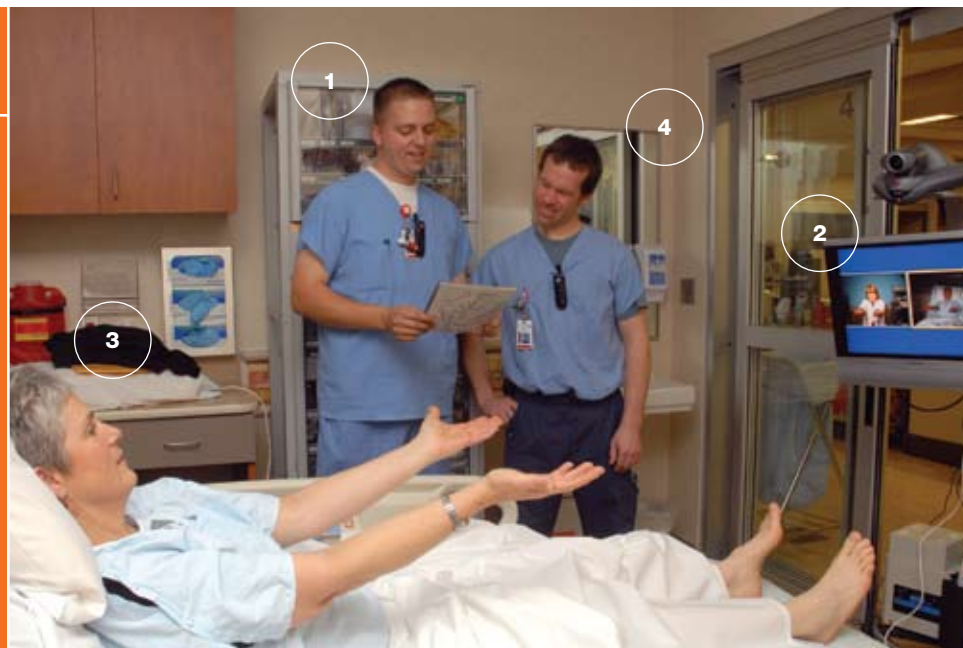
The TeleStroke program utilizes the same evidence-based acute stroke management protocol followed by the Stroke Center. Real-time telehealth instantly establishes a telecommunications link between local emergency department staff and a stroke specialist for consultation. The addition of videoconferencing capability facilitates 2-way interaction and gives the neurologist the benefit of seeing the patient face-to-face. Teleradiology allows rapid review of radiologic imaging that aids in quick and accurate diagnosis. A recent study shows that using telemedicine as opposed to the telephone does lead to more diagnostic accuracy.⁵

Because of the risks associated with thrombolytic therapy, health care providers who are not stroke experts may feel reluctant to administer this treatment in the community setting. TeleStroke's stroke specialists provide guidance on the administration

HOW TELESTROKE WORKS

COMMUNITY HOSPITAL

- 1 Doctor reviews patients status, determining need for stroke evaluation
- 2 Telestroke mobile unit brought in to patient
- 3 Patient speaks directly to the TeleStroke doctor and follows examination instructions
- 4 If necessary, hospital staff prepares patient for AirMed transport



of thrombolytics, giving on-site personnel the support and confidence needed to safely offer this therapy to eligible patients. Optimal treatment of progressing stroke and prevention of common stroke complications also begin in the emergency department. TeleStroke supports emergency department staff in initiating steps to manage stroke progression and prevent, recognize, and treat myocardial infarction, deep vein thrombosis, pulmonary embolism, aspiration pneumonia, and other secondary complications.

Follow-Up Stroke Care

Once an acute stroke patient has been stabilized, the TeleStroke program also allows community hospitals to offer follow-up services which ensure that stroke patients continue to receive the specialist care they need. The capabilities of the TeleStroke program include options for bedside follow-up and follow-up after hospital discharge with a stroke specialist.

Improved Patient Care

Fragmentation of the delivery of stroke-related health care services is a significant obstacle to optimal stroke management. Integrating emergency department care with specialty stroke consultation

“The TeleStroke program has been extremely beneficial to our facility. The availability of an immediate evaluation and consultation from a neurologist has allowed us to treat our stroke victims in a much more timely and efficient manner.”

Karla Evans, R.N.
Chief Nursing Officer
Beaver Valley Hospital
Beaver, UT

improves patient management, reduces risk, and increases patient confidence. In one study, stroke patients had significantly better chances of surviving and living independently when they received specialized stroke care in community hospitals that had telemedicine support from major stroke centers.²



TELESTROKE DOCTOR

- A** 24-7 on-call TeleStroke doctor receives call or page
- B** Doctor begins video conferencing and evaluates patient data
- C** Exam given via TeleStroke system to evaluate presence or severity of stroke
- D** Consultation with community hospital on best treatment plan for patient

TeleStroke empowers hospitals to better serve their communities. With the TeleStroke Program, geography is no longer a barrier to high quality stroke care. Community hospitals gain immediate access to stroke specialists, allowing them to augment their existing services and improve outcomes in stroke patients. Because TeleStroke uses the same stroke specialists and stroke protocols employed by the Stroke Center, community hospitals participating in TeleStroke can offer their patients the level of stroke care they would expect from a tertiary hospital.

The videoconferencing capability of TeleStroke enables meaningful dialogue, not only between the stroke expert and the on-site health care providers, but also between the stroke expert and the patients. These dialogues reassure patients that they are receiving the best possible stroke care.

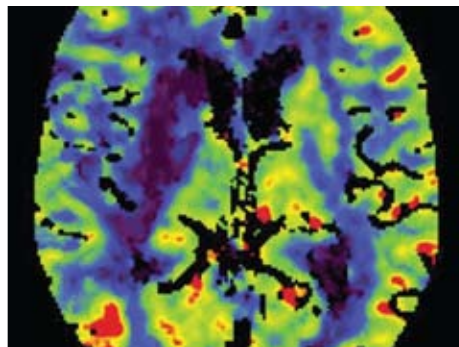
Reduced Costs

The efficient use of available health care resources is of paramount concern for all health care centers. And, the costs associated with establishing a comprehensive stroke care system may prevent smaller or more rural facilities from implementing effective stroke management.

“Since the inception of TeleStroke at our facility and with having a motto of ‘Health Care at Home,’ our stroke patients and their families have been thrilled to learn that they can receive the necessary treatments locally, potentially eliminating unnecessary transfers to Salt Lake.”

Laurie Schafer, R.N.
Patient Care Director
San Juan Hospital
Monticello, UT

Resource constraints no longer need to be an obstacle to acute stroke services. For community hospitals and other facilities that cannot afford 24/7 coverage by a neurologist, the TeleStroke program is a cost-effective way to deliver round-the-clock specialty stroke care to more patients.



Improved outcomes in stroke patients also translate into potential cost savings for both patients and the community health care facilities that serve them. Shorter hospitalizations and decreased disability reduce costs. Increased administration of thrombolytic medications to eligible patients also presents an opportunity to reduce stroke-related disability and overall costs to the U.S. health system.³ TeleStroke enables the rapid, accurate diagnosis needed to determine patient eligibility within the three-hour therapeutic window and offers community providers the support they need to administer thrombolytics at their location.

Eliminate Unnecessary Transfers

Access to specialty stroke care can be problematic and expensive, even within urban areas. Millions of health care dollars are spent each year transferring patients to hospitals that provide specialty services.

With TeleStroke, the number of costly and unnecessary patient transfers is minimized, significantly reducing costs to both patients and community health care facilities. According to the Center of Information Technology Leadership, telehealth reduces the number of transports by an estimated 30%.³

The TeleStroke program keeps more patients in their home communities, saving time and travel for them and their families, without sacrificing high quality care. Eliminating unnecessary transfers also keeps health care dollars local. For community hospitals, keeping, rather than transferring, stroke patients represents an opportunity to generate positive public relations and increased revenue from further care and, possibly, additional procedures.

Local Education and Patient Support

The benefits of the TeleStroke program extend far beyond the acute management of stroke. Interactions with TeleStroke specialists represent opportunities for emergency providers in the community to learn about stroke management and gain confidence in evaluating or treating stroke patients.

Patient education and support are also critical secondary stroke prevention strategies, especially because many of the established risk factors for stroke can be modified with medications or lifestyle changes. Due to the risk for recurrent stroke, TeleStroke providers ensure that stroke patients and their families receive education about stroke risk factors, warning signs, the availability of time-sensitive therapy, and the importance of early initiation of stroke rehabilitation.



Central Valley Medical Center, Nephi, Utah



Mountain West Medical Center, Tooele, Utah



University Health Care Stroke Center

*Front row - Karen Nani; Jodi Olson, RN; David Renner, MD; Sheila Bloomdale, LPN
Back Row - Suzy Bates; Jennifer Majersik, MD; Elaine Skalabrin, MD; Jeffrey Wagner, MD
(Not Pictured: Holly Ledyard, MD; Dana Dewitt, MD)*



*Utah Telehealth Network
Front row - Pete Bonsavage, Jeff Shuckra, Deb LaMarche, Joanne Rees, Patricia Willis
Back Row - George Lindsey, Rich Evans, Marz Cesarini
(Not Pictured: Marta Petersen, MD)*



TELESTROKE BACKBONE

Utah Telehealth Network is the essential backbone for the TeleStroke program. The reach of the program currently spans thousands of square miles, from the hub in Salt Lake City to nine rural hospitals around Utah and Wyoming.

Utah Telehealth Network (UTN)

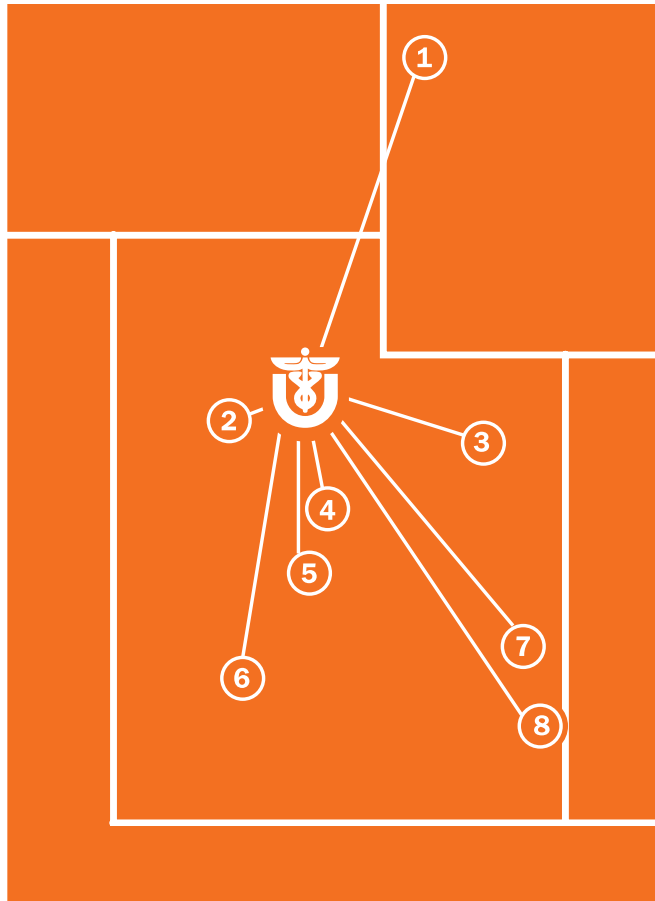
The TeleStroke program utilizes the technical infrastructure and support of Utah Telehealth Network, which links patients to health care providers across the state, country, and world through the innovative use of technology. UTN provides rural patients and providers with expanded access to services and resources that are usually available only in more populated urban areas.

Established in 1995 as a pilot project for telemedicine, UTN has become an essential and integral component of the Mountain

West's health care system, where health care is widely dispersed and limited in scope. UTN brings specialty clinical services, including TeleStroke, and educational programs to remote communities. It also provides network services and support to its rural members where data services can be cost-prohibitive for small hospitals.

University Health Care / Clinical Neurosciences Center

University Health Care's mission is to serve the public by improving health and quality of life. As part of its vision, University Health Care strives to improve patient access to health care services. The TeleStroke program is just one of many community outreach endeavors focused on extending the best quality care to community hospitals in the Mountain West and beyond.



CURRENT LOCATIONS

AS OF MARCH 2009

- 1. ST. JOHN'S MEDICAL CENTER**
Jackson, Wyoming
- 2. MOUNTAIN WEST MEDICAL CENTER**
Tooele, Utah
- 3. UINTAH BASIN MEDICAL CENTER**
Roosevelt, Utah
- 4. CENTRAL VALLEY MEDICAL CENTER**
Nephi, Utah
- 5. GUNNISON VALLEY HOSPITAL**
Gunnison, Utah
- 6. BEAVER VALLEY HOSPITAL**
Beaver, Utah
- 7. ALLEN MEMORIAL HOSPITAL**
Moab, Utah
- 8. SAN JUAN HOSPITAL**
Monticello, Utah

The University of Utah Clinical Neurosciences Center offers a patient-focused approach to caring for patients with the complete range of neurological and spinal disorders. Certified as a primary stroke center by the Joint Commissions on Accreditation of Healthcare Organizations (JCAHO), the Stroke Center provides comprehensive high-quality care to patients with cerebrovascular disease. A multidisciplinary team of physicians, including emergency physicians, neurologists, neurosurgeons, radiologists, and rehabilitation specialists, collaborates to provide a broad range of diagnostic and therapeutic options for stroke patients. The Stroke Center emphasizes acute intervention, using management protocols and advanced radiologic techniques to quickly and accurately diagnose stroke, with the goal of optimizing patient outcomes.

“One of the many advantages we have experienced from using TeleStroke is that all of our doctors and nurses are gaining more knowledge on treating stroke, by getting the perspective of a specialized neurologist on a regular basis.”

Steve Rouzer, M.D.
Medical Director of the ER
Allen Memorial Hospital
Moab, UT

FAQ's

How much does the TeleStroke Program cost?

The costs vary depending on the needs of each individual site. Costs include:

- TeleStroke equipment
- Network/Connectivity. This cost varies from site to site. If the site has a connection that allows adequate bandwidth for the equipment, there is a reduced cost to cover technical support.
- Program Support Fee. This is determined by the patient site projected volume and is reviewed to ensure fees are correctly assessed.

For more information, please contact the Teleneurology Coordinator at the University of Utah Stroke Center to arrange a site visit. (See the "Contact Information" section on the back cover of this brochure)

How much does the consultation cost the patient site?

The program support fee covers all on-call and consultation services. No additional fees are assessed for initiating a TeleStroke consultation. The consulting physician is responsible for billing the patient's insurance for the consult visit.

What happens if the TeleStroke equipment fails?

The program provides 24/7 technical support. Protocols are designed and distributed to each site that indicates the procedure to follow if technical difficulties arise. In the chance that the equipment fails to work properly and is unable to be resolved during a TeleStroke consultation, the consulting physician will complete the consultation via the telephone.

Am I obligated to send my patients to the University of Utah Hospital?

No. Using the TeleStroke program does not obligate the patient site to send the patients to the University of Utah Hospital. If a patient site wishes to transfer their patient, they may send to any facility of their choice.

Once the TeleStroke program is up and running, are we obligated to use it?

No. The patient site may choose to use the TeleStroke program whenever they feel it is necessary.

Are their liabilities associated with TeleStroke?

The liabilities are the same as if the consult was in person.

Is using TeleStroke an attempt to "steal" my patients?

No. TeleStroke is a way to triage the patients that come into your facility. The use of TeleStroke allows the ED physicians the opportunity to consult with a stroke specialist if they feel it is needed.

What if the ED physician does not agree with the TeleStroke consultant?

The final decision will always be that of the bedside physician treating the patient. There is no obligation for the patient site physician to follow the recommendations of the consulting physician.

How does TeleStroke protect patient confidentiality?

TeleStroke is HIPAA-compliant, and site personnel are responsible for obtaining a signed telemedicine consent and HIPAA policy from each patient. UTN uses HIPAA-secure virtual private networks (VPNs) to ensure secure transmission of electronic patient health information.

How does billing for TeleStroke work?

University of Utah will bill the patient, or the patient's insurance, for the fee of telemedicine stroke consultation only. The site hospital will bill for CT interpretation in their usual fashion. The University of Utah will not bill for CT interpretation or 'over-read.' In the event that the patient is referred or admitted to the University of Utah for services other than those specified in the TeleStroke agreement, the University of Utah will bill the patient, or the patient's insurance carrier, for those services in accordance with its normal conduct of business.

How do I know the consulting physicians on the other end of the camera are qualified?

The TeleStroke program only utilizes a dedicated small group of experienced stroke attendings that have been trained on the TeleStroke program.

TECHNICAL REQUIREMENTS

TeleStroke employs state-of-the-art technologies that are user-friendly, readily available, reliable, and secure. This means that TeleStroke is easy to deploy, operate, and maintain. Here's what you'll need to get started with TeleStroke:

Site Requirements

- Dedicated Emergency Room with telephone line and Internet access
- 24-hour laboratory testing
- Pharmacy that stocks tissue plasminogen activase

Equipment & Technology

- Video Conferencing equipment, H323 Compatible
- 24-hour CT scanner
- T1 Connection with a minimum available bandwidth of 900 Kbps
- PC with Internet
- Teleradiology capability

Program Management

The TeleStroke program provides comprehensive education and training to patient site personnel regarding the specific expectations for a TeleStroke patient examination.

Before TeleStroke deployment:

- UTN will conduct a technical assessment and, if necessary, make recommendations to ensure that the site's infrastructure will support Telestroke.
- The TeleStroke team will spend a half-day with the practicing physicians, nurses, and hospital staff to review and practice the acute stroke management protocol.
- TeleStroke and UTN staff will educate and train patient site personnel on the use of the telehealth equipment.
- Several mock patient examinations via teleconferencing will be planned to practice quick and accurate deployment of the stroke protocol.
- TeleStroke and UTN staff will assist with any additional education and training of patient site personnel to meet the needs of the patients and providers.

After TeleStroke deployment:

- TeleStroke and UTN staff will assist with ongoing education and training of patient site personnel to meet the changing needs of both the patients and providers.
- TeleStroke and UTN staff will periodically assess the quality of the teleconference consultation, including the equipment, connection, protocol, staff interaction, consultation timeliness, and patient outcomes. Through evaluation of these performance measures, the TeleStroke program continues to evolve and improve.

Is TeleStroke secure?

Yes. TeleStroke operates on the Utah Telehealth Network (UTN), which functions as a secure private network.

What are the Medicare and Medicaid reimbursement policies for TeleStroke?

Clinical services provided over telehealth are reimbursable by Medicare and most third-party payers. Medicaid reimbursement policies for telehealth vary by state. In Utah, Medicaid reimbursement for telehealth services is determined on a case-by-case basis. Technical fees to cover network expenses are not included in the reimbursement structure.

References

1. Wang S, Gross H, Lee SB, et al. Remote evaluation of acute ischemic stroke in rural community hospitals in Georgia. *Stroke*. 2004;35:1753-1768.
2. Audebert HJ, Schultes K, Tietz V, Heuschmann PU, et al. Long-term effects of specialized stroke care with telemedicine support in community hospitals on behalf of the Telemedical Project for Integrative Stroke Care (TEMPiS). *Stroke* 2008; Published online before print November 20, 2008.
3. Fagan SC, Morgenstern LB, Petitta A, et al. Cost-effectiveness of tissue plasminogen activator for acute ischemic stroke. NINDS rt-PA Stroke Study Group. *Neurology* 1998;883-890.
4. Cusack CM, Pan E, Hook JM, et al. The Value of Provider-to-Provider Telehealth Technologies. *Center for Information Technology Leadership* 2007: 27.
5. Meyer BC, Raman R, Hemmen T, et al. Efficacy of site-independent telemedicine in the STRokE DOC trial: a randomised, blinded, prospective study. *Lancet Neurol*. 2008 Sep;7(9):787-795.

CONTACT INFORMATION

To learn more about TeleStroke or
Utah Telehealth Network, visit

www.utahtelehealth.net

or call the University of Utah Stroke Center at

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