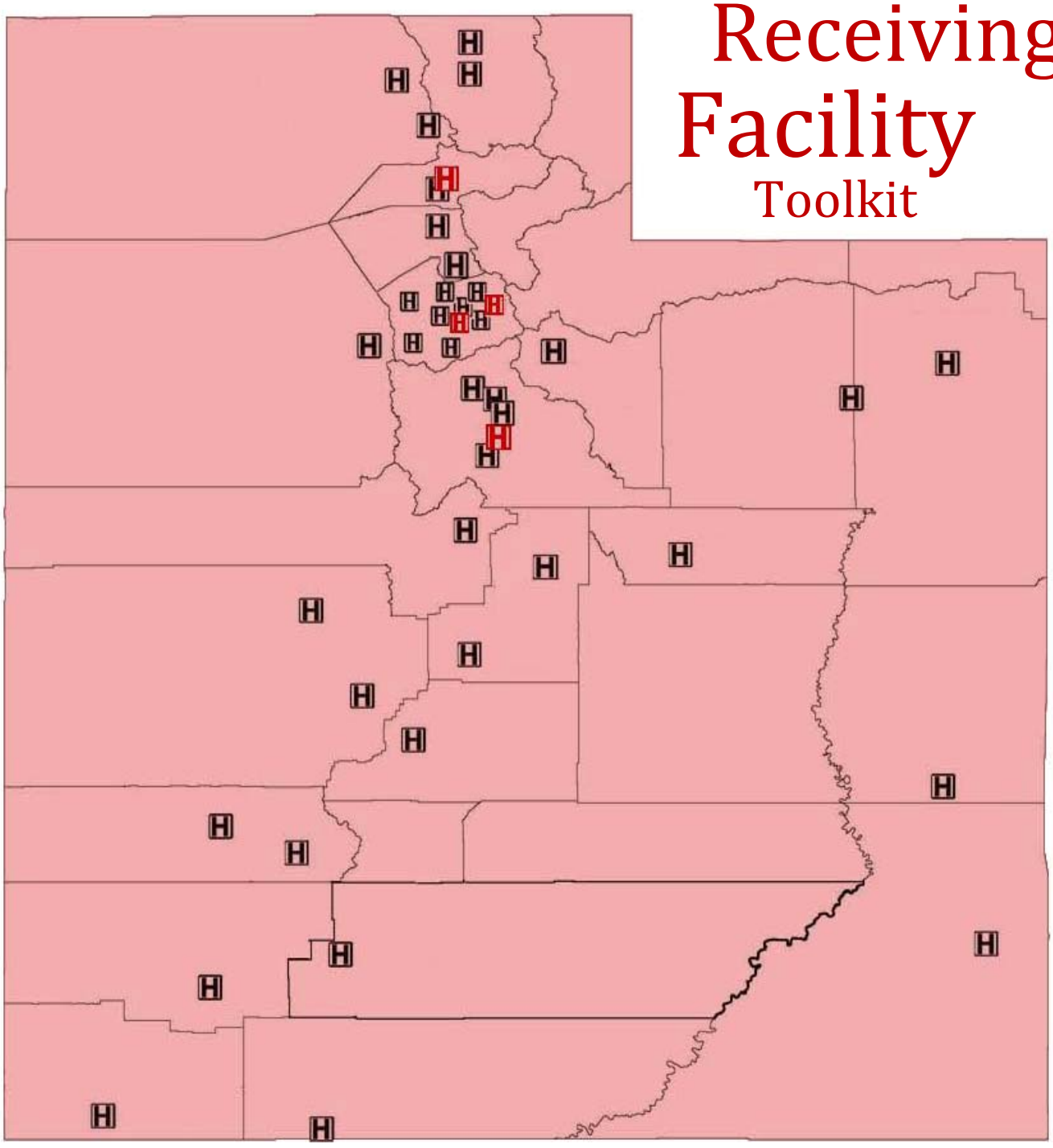
Stroke Receiving Facility Toolkit



Utah State Stroke System

ALLIANCE FOR CARDIOVASCULAR HEALTH IN UTAH

Stroke Receiving Facility

A Utah State Stroke System Toolkit

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Becoming a Stroke Receiving Facility

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Why Become a Stroke Receiving Facility?

Stroke is the third leading cause of death in the United States and Utah (Utah Heart Disease and Stroke Prevention Program, 2007, p.16). Between 2003 and 2007, the Utah mortality rate for stroke was 45.7 deaths per 100,000 population (Utah Department of Health: IBIS Public Health, 2009). Stroke is also the leading cause of long-term disability in the U.S. (Utah Heart Disease and Stroke Prevention Program, 2007, p. 16). In Utah, between 2003 and 2007, a total of 13,024 people visited the hospital for stroke (Utah Department of Health: IBIS Public Health, 2009). The state hospitalization rate decreased during these years, from a rate of 17.0 hospitalizations per 10,000 in 2003 to a rate of 14.0 hospitalizations for stroke per 10,000 in 2007 (Utah Department of Health: IBIS Public Health, 2009). Stroke is also a financial burden in Utah, and between 2001 and 2005, the average annual charge for all stroke hospitalizations and emergency department visits in Utah was $47 million, and government funds paid for the majority of those charges (Utah Heart Disease and Stroke Prevention Program, 2007, p. 36).

In 2007, 55.0% percent of stroke hospitalization discharges were from the four Joint Commission Certified Primary Stroke Centers (Primary Stroke Centers) in the state (Utah Department of Health: IBIS Public Health, 2009). Thus, just over half of Utah residents treated for stroke did so at a Primary Stroke Center, which is certified and recognized for stroke treatment, while 45% of the stroke discharges were from hospitals that were not designated for stroke treatment. Becoming a Stroke Receiving Facility in Utah signals to the Emergency Medical Services (EMS) and community members that the hospital is willing and competent to treat acute ischemic stroke victims, and has taken the necessary steps of preparation.

Hospitals that have established designated stroke facilities have demonstrated improved treatment, better patient outcomes, and reduced care costs (ACT for Stroke, 2006, p. 5). They have the required infrastructure and written protocols to stabilize and provide rapid, optimal, and efficient care to acute stroke patients (ACT for Stroke, 2006, p. 5).

One goal of the Utah State Stroke System is to help all hospitals in the state take the necessary steps, provided in this toolkit, to become a designated Stroke Receiving Facility for treatment of acute ischemic stroke. The Utah State Stroke System will consist of a “Spoke and Hub” System, where the “Hub” hospitals are the four Primary Stroke Centers in the state. These Primary Stroke Centers are: McKay-Dee Hospital in Ogden, Intermountain Medical Center in Murray, University of Utah Medical Center in Salt Lake City, and Utah Valley Regional Medical Center in Provo. All hospitals who wish to be designated Stroke Receiving Facilities by the state must follow the application process and requirements in this toolkit, and after submitting and receiving approval of an application, the hospital will be designated by the Department of Health (DOH), Bureau of EMS (BEMS), and Health Systems Improvement (HSI). EMS will be preferentially directed to take suspected stroke patients to the designated Primary Stroke Centers and Stroke Receiving Facilities in the state. Therefore, all hospitals are encouraged to complete the implementation and application process.

This toolkit will provide medical professionals and hospital administrators the necessary information to improve their hospital’s acute stroke care and become a designated Stroke Receiving Facility in Utah. Each hospital is invited to select the information that will best apply to the facility and plan its Stroke Receiving Facility implementation.

Overview of Stroke Receiving Facility Requirements

The following requirements must be met in a hospital to receive designation of a Stroke Receiving Facility.

1. **Acute Stroke Team**
    - 24/7 Physician authorized to treat stroke
    - 24/7 ED nurse trained to treat stroke
    - Stroke Coordinator
2. **Written Care Protocols**
    - Standardized stroke scales and treatment protocols
3. **Emergency Medical Services**
4. **Emergency Department (ED)**
    - Open 24/7
5. **Stroke Unit**
6. **Commitment and Support of Medical Organization**
7. **Neuroimaging Services**
    - 24/7 CT scan availability
    - Completed and interpreted within 45 minutes
8. **Laboratory Services**
    - Open 24/7
    - CBC, BMP, PT/PTT/INR completed within 45 minutes
9. **Outcomes and Quality Improvement Activities**
10. **Continuing Education**

Summary of Stroke Receiving Facility Requirements

The following summary includes specific requirements for designation of a Stroke Receiving Facility in Utah. It is an expansion of the outline listed on the previous page.

1. **Acute Stroke Team**
    a. Must include (and be available 24/7):
        - Neurologist or emergency medicine physician
            - Available to the bedside within 10-20 minutes of patient arrival.
            - A call roster of physicians trained to treat strokes must be maintained.
            - Immediate consultation with a stroke expert at a "Hub" hospital may be done in person, using Telestroke technology, or by other technology means.
            - "Hub" hospitals will provide 24/7 available consultation with a stroke expert to Stroke Receiving Facilities.
        - ED nurse, who is authorized to begin stroke protocol using the standardized medicines, forms, and protocols in this toolkit.
        - Stroke Coordinator
            - Collect and submit standardized data regularly to the State Stroke System Coordinator, Dr. Peter Taillac (information listed on next page).
    b. Team can also include: neurosurgeon, lab technician, radiologist, pharmacist, social worker, rehabilitation specialist.
    c. These members dedicate at least a portion of their time to stroke at the hospital and make stroke care a priority.
    d. Provide training on a continuing basis for new staff and for all staff each time a protocol is updated.
2. **Written Care Protocols**
    a. Standardized stroke scales and treatment protocols are listed in this toolkit and should be designed, adapted, and utilized by the team.
    b. Should include use of a written protocol for patients eligible to receive intravenous t-PA treatment (recombinant tissue plasminogen activator known as Activase or Alteplase) and other acute therapies such as stabilization of vital functions, provision of neuroimaging procedures.
    c. In eligible patients, t-PA must be administered within 3 hours of acute stroke symptom onset, and a CT scan must be obtained to exclude the presence of ICH.
    d. Protocols should also provide information regarding emergency care of acute ischemic strokes, stabilization of vital functions, initial diagnostic tests, and initial use of medications.
    e. Should be available where stroke patients may be evaluated or treated.
    f. Should be reviewed and updated at least once per year.
    g. The standardized pre-hospital stroke screening, treatment, and transportation to designated Primary Stroke Centers or Stroke Receiving Facilities in Utah will reduce the "door-to-needle" time of patients with acute ischemic strokes who may benefit from thrombolysis. It will also reduce the delay and improve the overall care of other stroke patients who may not qualify for thrombolysis (stroke symptoms>3 hours, hemorrhagic strokes, stuttering strokes or TIAs, severe HTN, etc.).
3. **Emergency Medical Services**
    a. Calls for possible stroke should be assigned high priority for evaluation and transport.
    b. EMS will use standardized pre-hospital treatment protocol, such as that listed in this toolkit, for suspected stroke patients.
    c. Educational activities should be offered yearly.

4. **Emergency Department (ED)**
    a. Must be open 24/7
    b. Personnel should be trained to diagnose and treat all types of acute strokes.
    c. ED should document performance measures such as time from symptom onset to treatment.
    d. Educational activities for ED staff should occur yearly to reinforce stroke diagnosis and treatment.
5. **Stroke Unit**
    a. Does not have to be a distinct unit, but it must provide continuous telemetry monitoring, written care protocols, and BP monitoring at all times.
    b. Personnel should have expertise in managing stroke care.
6. **Commitment and Support of Medical Organization**
    a. Stroke Receiving Facility should designate a Stroke Coordinator.
    b. Hospital administration should provide financial, logistical, and political support to garner needed resources.
    c. Importance of hospital administrative support cannot be overemphasized.
7. **Neuroimaging Services**
    a. CT scan
        - Available 24/7
        - Completed and interpreted within 45 minutes.
        - Interpreted by a radiologist, neurologist, or neurosurgeon.
        - Interpreted either in person, by teleradiology, or by other technology means.
8. **Laboratory Services**
    a. Available 24/7
    b. Completed within 45 minutes of being ordered: CBC, BMP, PT/PTT/INR
9. **Outcome and Quality Improvement Activities**
    a. Database or registry of stroke patients should be developed, including specific indicators such as performance measures or complication rates.
    b. Benchmarks for comparison should be established (can be selected from treatment guidelines).
    c. Facility should select at least 2 patient-care issues each year.
    d. Pre-specified committees should meet at least 3 times a year to review/modify practice patterns.
10. **Continuing Education**
    a. Stroke center personnel involved in patient care should have yearly continuing education related to stroke care.
    b. Stroke center should hold yearly public education programs on stroke risk factors, symptom recognition, prevention, etc.
    c. Materials are available from the DOH Heart Disease and Stroke Prevention Program.

Note: Stroke Receiving Facilities are encouraged to keep uncomplicated stroke patients during the duration of treatment. The Primary Stroke Centers in the state are available for consultation at any time during the patient's hospitalization.

The following are DOH contacts for the Utah State Stroke System. Any questions on planning and operations can be directed to:

Peter Taillac, MD, FACEP
Medical Director
Bureau of EMS and Preparedness
801.273.6646
ptaillac@utah.gov

Robert Jex, RN, MS
Stroke/STEMI Program Coordinator
Bureau of EMS and Preparedness
801.273.4161
rfjex@utah.gov

Stroke Receiving Facility Application Process

1. Hospitals wishing to become a Stroke Receiving Facility must submit a letter of intent to the DOH, using the address below, which states interest in designation and requests an application for designation as a Stroke Receiving Facility.

   Applications may be requested from and returned to:

   Robert F. Jex, RN, MHA, FACHE
   Utah Department of Health
   P.O. Box 142004
   Salt Lake City, Utah 84114

   The application can also be accessed at: www.hearthighway.org

2. Upon receipt of the completed application, the DOH will review the application for completeness and schedule a site visit to the applicant hospital.

3. The department will select a team of qualified consultants and a department representative to document compliance with elements outlined in the application. Upon completion of the visit, the site team will review its findings with the hospital administrator and his or her representatives. Those findings will include the following:

   - Hospital Stroke Program Strengths
   - Weaknesses
   - Deficiencies
   - Any recommendations pertinent to the site visit

4. A report of those findings and a recommendation will be presented to the Stroke Advisory Committee, which will recommend to the DOH Executive Director either approval or denial of the application for designation.

5. A document of designation as a Utah Stroke Receiving Facility will be provided to the successful applicant, indicating that the hospital has complied with Stroke Receiving Facility requirements. This designation will be for a period of three (3) years from the date of the site visit.

6. Facilities with deficiencies that prevent designation as a Stroke Receiving Facility will be given the opportunity for a focused visit within the succeeding six (6) months to verify that the stated deficiencies have been corrected. Designation may then be awarded for a three (3) year period from the original site visit.

Please see Appendix D for the actual Utah Stroke Receiving Facility Application.

Medical Treatment and Protocol

EMS Protocol
Initial Treatment/Triage
Stroke Protocol
NIH Stroke Scale

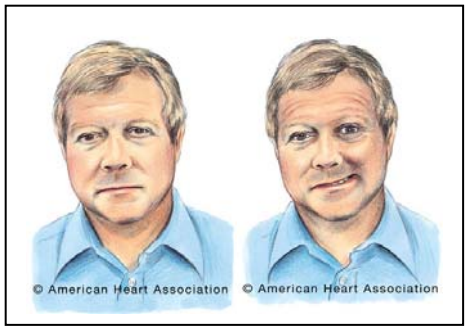
EMS Protocol

EMS are essential in providing improved care to stroke victims, and protocol must be followed. EMS will use standardized pre-hospital treatment protocol for suspected stroke patients, as part of the Utah State Stroke System. The following are guidelines for stroke patients for all EMS in Utah.

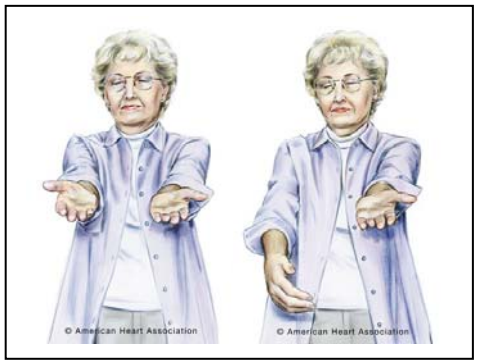
On Scene:

1. **Manage ABCs (Airway, Breathing, and Circulation). Give oxygen if needed.**
2. **Perform prehospital stroke assessment using the Cincinnati Stroke Scale.**

- **Facial Droop** (have patient smile)
  - **Normal:** Both sides of face move equally
  - **Abnormal:** One side of face does not move as well



- **Arm Drift** (have patient hold arms out for 10 seconds)
  - **Normal:** Both arms move equally or not at all
  - **Abnormal:** One arm drifts compared to the other, or does not move at all



- **Speech** (have patient speak a simple sentence)
  - **Normal:** Patient uses correct words with no slurring
  - **Abnormal:** Slurred or inappropriate words, or mute

3. **Establish and record an exact time, in military time, when patient was "Last Seen Normal."**

In Transit:

1. **Rapidly transport to closest Stroke Receiving Facility.**
2. **Bring witness or family member if possible, or record the names and phone numbers of witnesses.**
3. **Alert the receiving emergency department.**
4. **Check and record blood glucose to assess for hypoglycemia.**
5. **Check and record blood pressure.** Do NOT administer any hypertensive medication without physician approval.
6. **Establish cardiac monitoring and IV access with large bore catheter, if possible.**

(Photos from http://www.strokecenter.org/trials/scales/cincinnati.html)

Initial Treatment/Triage

When the stroke victim is admitted to the ED, begin stroke protocol. The goal of this protocol should be to rapidly administer t-PA (recombinant tissue plasminogen activator known as Activase or Alteplase) in appropriately screened candidates. Refer to the Stroke Protocol Algorithm at the end of this section, as well as the following evaluation and intervention steps, which should occur concurrently with each other. To view protocols from Stroke-certified hospitals in Utah, please refer to the Samples of Protocols in the Appendix.

The following are NIH recommendations:

- The "door to first physician contact" goal is within 10 minutes.
- The "door to initiation of CT scan" goal is within 25 minutes.
- The "door to drug" goal for thrombolytic treatment is within 60 minutes.

It is **essential** to notify the stroke team, lab, pharmacy, and CT as soon as the call comes into ED.

Evaluation:

1. **Review History and t-PA Treatment Indications and Contraindications and Baseline NIHSS**
   Take a complete patient history, including a review of indications and contraindications for treatment with t-PA. Evaluate for the mimics of stroke as well.

2. **Perform Vital Signs Every 15 Minutes with Neuro Checks (Not NIHSS)**
   It is the standard of practice to perform a baseline NIHSS neurological assessment. For subsequent neuro checks, it is appropriate to use a less extensive tool. Performing a full NIHSS assessment every 15 minutes is often not feasible nor is it a good use of time. This following neuro check is an option:

   Level of Consciousness – measures the level of alertness of the patient
   - Is the patient alert, alert with stimulation or requires repeated stimulation to remain alert, or comatose?
   - Is the patient able to correctly mouth his/her name and age?
   - Is the patient able to correctly follow simple commands of opening and closing his/her eyes?

   Motor Functions – measures the motor functions and patient's ability to follow commands
   - Is the patient able to perform a series of arm movements?
   - Is the patient able to perform a series of leg movements?

   Language Skills – measures the amount of aphasia and dysarthria in response to asking patients to describe an item or read several sentences

3. **Record Weight** (Do NOT estimate)

4. **Draw Blood for Lab Tests:** CMP, CBC with platelets, PT, PTT

5. **Perform EKG**

6. **Perform CT Head without Contrast**
   A CT scan without contrast must be performed prior to treatment with t-PA, primarily for the purpose of excluding hemorrhage. If patient has hemorrhage, please STOP following these directions.

7. **Blood Pressure Management Should be Left to Physician.**

Intervention:

1. **Educate Patient and Family**
   A process should be in place for the patient and family that will rapidly orient them to the suspected diagnosis, ED process, tests to be performed, t-PA treatment and its risks, and other treatment measures to be considered. This could include caregiver face-to-face interaction with the patient and family as well as teaching tools in written form. Education should be documented in the medical record.

2. **Treat Hypertension If Greater than 185 Systolic and 110 Diastolic**

3. **Initiate Two Large Bore IV Lines**
   Two large bore intravenous lines (18 gage or larger) should be started so that t-PA (recombinant tissue plasminogen activator known as Activase or Alteplase) may have a dedicated line.

4. **Start IV Fluids**
   Treatment with a 0.9% normal saline at a rate of 75 to 125 cc/hr or 2-3 L/day should be administered to avoid dehydration. The rate may be adjusted for febrile patients. IV fluids are particularly important for patients in whom oral intake is prevented or limited by swallowing problems. Dehydration is fairly common on admission in stroke patients.

5. **Treat Hyperthermia**
   Interventions for patients with temperatures of greater than 37.5 degrees C (99.5 degrees F) include appropriate dosing of acetaminophen (1 gram orally or 650 mg rectally every four to six hours, not to exceed 4-6 grams in 24 hours) and regular monitoring of temperature status (every four hours). For those patients with extreme hyperthermia greater than 39.4 degrees C (103 degrees F), aggressive interventions including cooling blankets and ice packs are encouraged. Causes for temperature elevation should be sought and treated. Early hyperthermia in acute stroke is associated with increased risk of poor outcome, higher mortality, and increased infarct volume.

6. **Treat Hyperglycemia**
   Hyperglycemia may adversely influence clinical outcome. Early identification of patients with hyperglycemia in the setting of acute ischemic stroke or in those at risk for cerebral ischemia (ED evaluation of glucose level) is recommended.
   - Avoid any agents or factors which might induce hyperglycemia.
   - Eliminate glucose from any IV solutions used. (Recommend use of normal saline.)
   - Avoid use of corticosteroids, even in those patients with cerebral edema, as they are not helpful and may be harmful. Separate recommendations are needed for those on maintenance corticosteroids, for concurrent conditions, and treatment decisions are left to the discretion of the physician.
   - Use appropriate measures to maintain euglycemia, carefully avoiding hypoglycemia.
   - Continue to monitor glucose with bedside testing in those receiving treatment in order to maintain euglycemia.

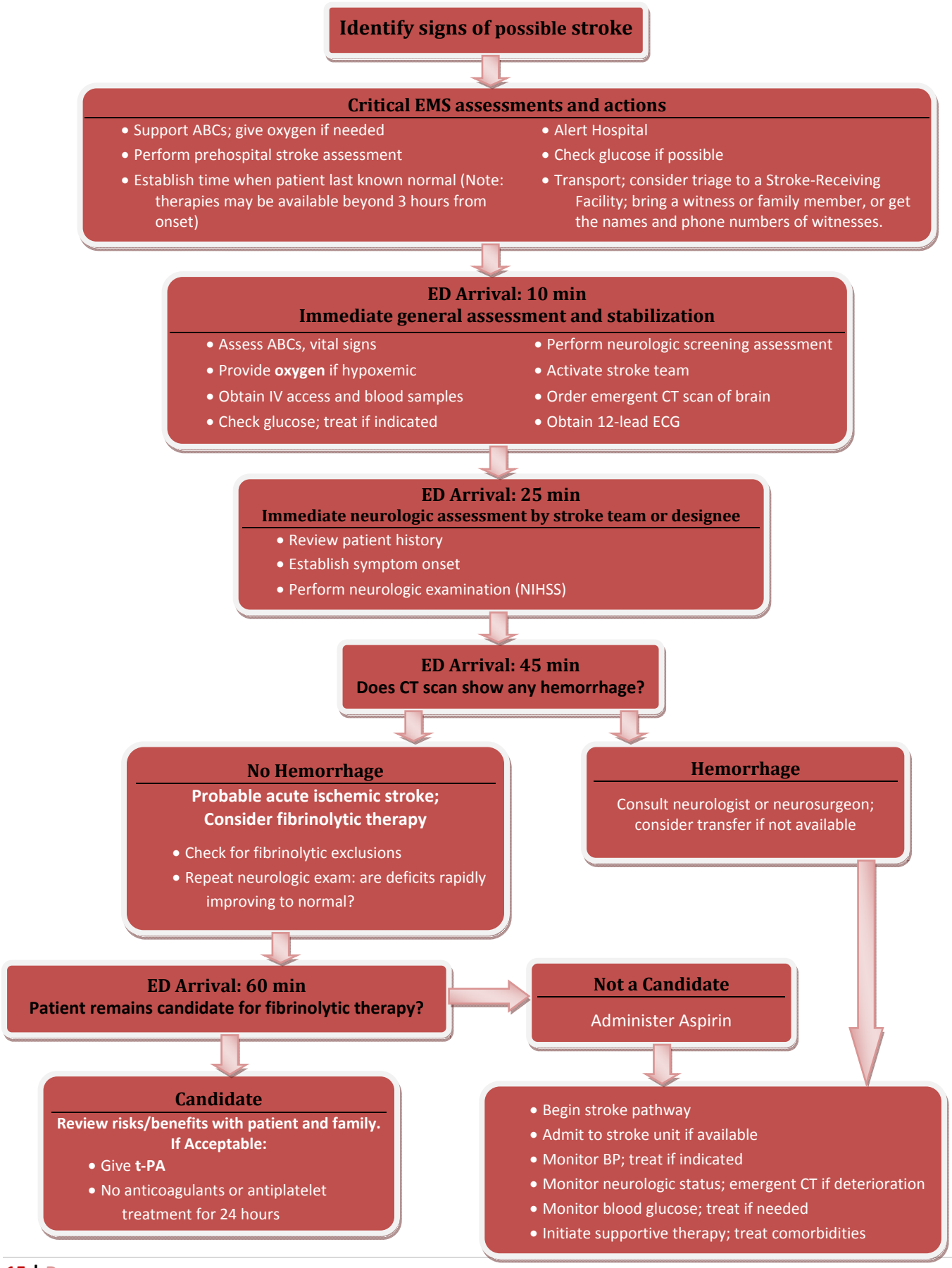
   It remains unclear whether early hyperglycemia in the setting of acute stroke is a marker of physiologic stress or an independent predictor of poor outcome. Usual management of hyperglycemia (glucose levels greater than 140 mg/dL) with gentle dosing of subcutaneous insulin, avoiding hypoglycemia, in a timely manner during acute ischemia would seem prudent until ongoing clinical trials address the appropriateness of more aggressive treatment measures.

7. **Initiate t-PA if patient meets criteria** (See Activase Mixing Directions, and review the contraindications.)

8. **Admit to Intensive Care Unit**

(National Guideline Clearinghouse and Institute for Clinical Systems Improvement, 2008)

Stroke Protocol Algorithm



NIH Stroke Scale

This scale measures the level of impairment caused by a stroke, and helps to assess whether or not the degree of disability caused by a given stroke merits treatment with t-PA (recombinant tissue plasminogen activator known as Activase or Alteplase). A maximal score of 42 represents the most severe and devastating stroke. Current guidelines as of 2008 allow strokes with scores greater than 4 points to be treated with t-PA.

See attached NIH Stroke Scale for full scale. Below is a modified version:

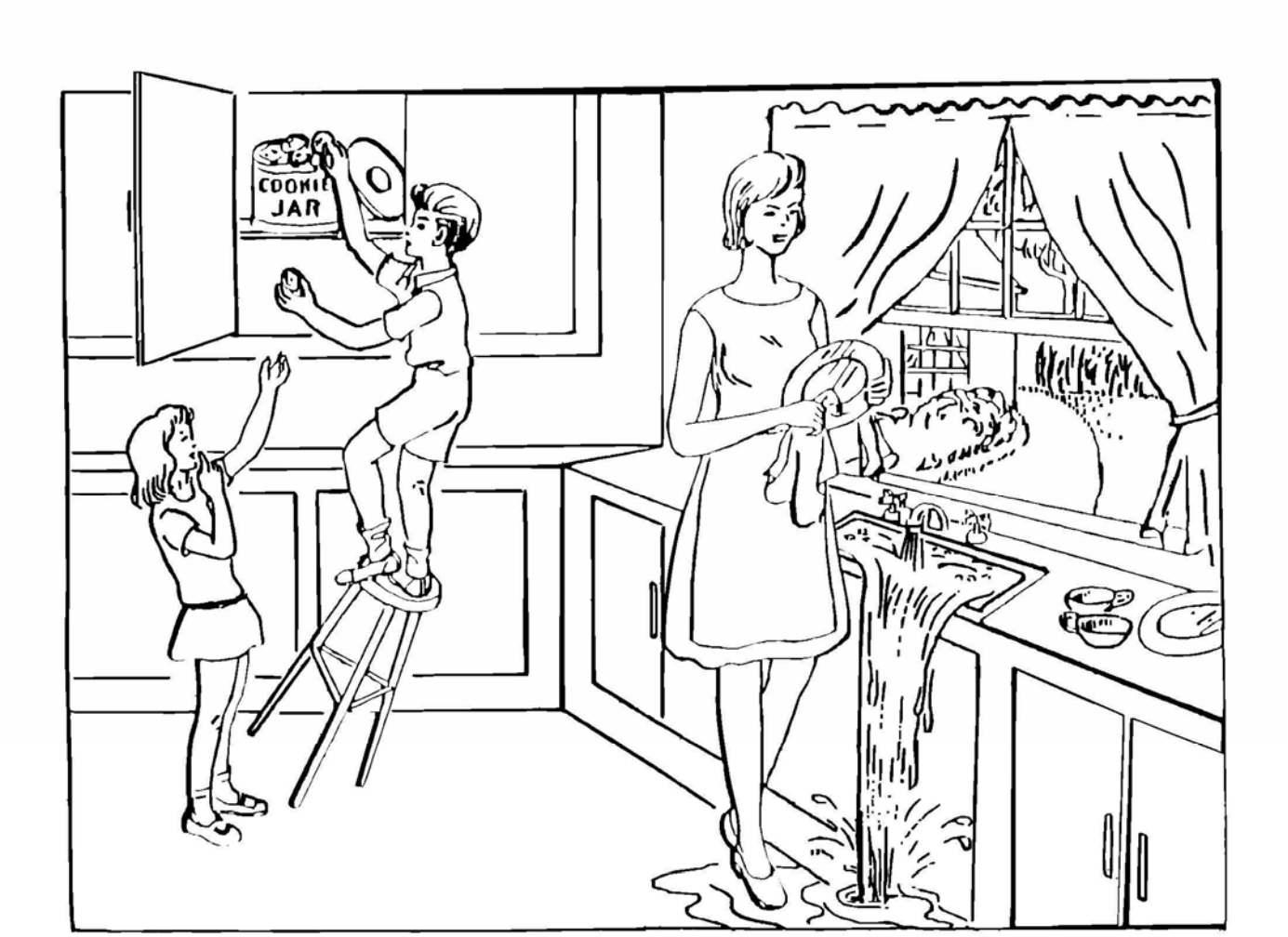
Instructions: Administer stroke scale items in the order listed. Record performance in each category by circling the number in the "Score" column. Do not go back and change scores. Follow directions provided for each exam technique. Scores should reflect what the patient does, not what the clinician thinks the patient can do. The clinician should record answers while administering the exam and work quickly. Except where indicated, the patient should not be coached (i.e., repeated requests to patient to make a special effort).

Category	Description	Score
1a. Level of Consciousness (Is the patient alert, drowsy, etc?)	Alert Drowsy Stuporous Coma	**0** **1** **2** **3**
1b. LOC Questions (Ask patient the month and his/her age. Patient must be exactly right.)	Answers both correctly Answers one correctly Both incorrect	**0** **1** **2**
1c. LOC Commands (Ask patient to open/close eyes and then grip/release nonparetic hand.)	Obeys both correctly Obeys one correctly Both incorrect	**0** **1** **2**
2. Best Gaze (Only horizontal movement tested. Oculocephalic reflex is OK, but not calorics. Eyes open-patient follows finger or face.)	Normal Patient gaze palsy Forced deviation	**0** **1** **2**
3. Visual (Test by confrontation. Introduce visual stimulus to patient's upper and lower field quadrants.)	No visual loss Partial hemianopia Complete hemianopia Bilateral hemianopia	**0** **1** **2** **3**
4. Facial Palsy (Ask patient to show teeth/smile, raise eyebrows and squeeze eyes shut.)	Normal Minor Partial Complete	**0** **1** **2** **3**
5a. Motor Arm Left (Extend left arm, palm down, to 90 degrees if sitting or 45 degrees if supine.)	No drift Drift Can't resist gravity No effort against gravity No movement Amputation, joint fusion	**0** **1** **2** **3** **4** **UN**
5b. Motor Arm Right (Extend left arm, palm down, to 90 degrees if sitting or 45 degrees if supine.)	No drift Drift Can't resist gravity No effort against gravity No movement Amputation, joint fusion	**0** **1** **2** **3** **4** **UN**

6a. Motor Leg Left (Elevate left leg to 30 degrees and flex at hip, always supine.)	No drift Drift Can't resist gravity No effort against gravity No movement Amputation, joint fusion	**0** **1** **2** **3** **4** **UN**
6b. Motor Leg Right (Elevate left leg to 30 degrees and flex at hip, always supine.)	No drift Drift Can't resist gravity No effort against gravity No movement Amputation, joint fusion	**0** **1** **2** **3** **4** **UN**
7. Limb Ataxia (Finger-nose, heel-shin tests done on both sides.)	Absent Present in one limb Present in two limbs	**0** **1** **2**
8. Sensory (Use a pinprick to face, arm, trunk, and leg – compare side to side. Assess patient's awareness of being touched.)	Normal Partial loss Severe loss	**0** **1** **2**
9. Best Language (Ask patient to name items, describe a picture, read a sentence; intubated patients should write responses.)	No aphasia Mild to moderate aphasia Severe aphasia Mute	**0** **1** **2** **3**
10. Dysarthria (Evaluate speech clarity by asking patient to repeat listed words.)	Normal articulation Mild to moderate dysarthria Near to unintelligible Intubated or other barrier	**0** **1** **2** **UN**
11. Extinction and Inattention (Use information from prior testing to identify neglect or double simultaneous stimuli testing.)	No neglect Partial neglect Complete neglect	**0** **1** **2**

NIH Stroke Scale visual attachments are on the following pages.

(View full NIH Stroke Scale online at http://www.ninds.nih.gov/doctors/NIH_Stroke_Scale_Booklet.pdf)


COOKIE
JAR

You know how.

Down to earth.

I got home from work.

Near the table in the dining room.

They heard him speak on the radio last night.

MAMA

TIP – TOP

FIFTY – FIFTY

THANKS

HUCKLEBERRY

BASEBALL PLAYER

Evaluation and Improvement

QI Improvements
Educational Resources

QI Improvements and Performance Measures

A key component of improving the quality of stroke care involves monitoring key performance measures that will tell you what your strengths are and what areas need improvement. Determine the goals for your hospital's stroke center and select several indicators that will help achieve them. For example, if your goal is to improve quality of care, then you would consider monitoring door-to-needle time, door-to-CT time, the percentage of eligible patients treated with t-PA, clinical outcomes (stroke scale results), the prevention of complications, or customer satisfaction.

The Stroke Receiving Facility designation process will require the monitoring and reporting on specific performance measures. By aligning your goals with these performance measures, you will be able to identify successes and areas where improvement is needed.

Some performance measures and systems for monitoring change include:

- Length of stay
- Cost/charge per stroke patient
- Diagnostic/bed utilization
- Clinical outcomes
- Eligible patients treated
- Time data
- Prevention of complications
- Customer satisfaction

Educational Resources

The following websites are recommended for more information on stroke care and treatment.

American Heart Association
http://learn.heart.org/

- Distance Learning via Printed Material, DVD, CD-ROM
  - A Clinician's Guide to Thrombosis DVD and Monograph
  - Stroke: Improving the Chain of Recovery
- Online Courses, Webinars and Webcasts
  - Get With the Guidelines on-line courses
  - NIHSS Stroke Scale Training and Certification
  - Focus on Acute Ischemic Stroke and Thrombolytics 2007
  - Stroke Pre-hospital care
- Podcasts/Audiocasts
  - Key Findings: An International Stroke Conference Podcast
- Satellite Broadcasts with Web Course Archives
  - Ischemic Stroke: Risk Factors and Primary Prevention Strategies
  - Risk Factor Control for Stroke: Secondary Prevention Strategies

Brain Attack Coalition
http://www.stroke-site.org/

- Guidelines and example Hospital Admission Orders, Physician Orders, and pertinent checklists.
- Patient Resources

Medical Priority Consultants
www.medicalpriority.com

- For medical dispatchers: The EMD Advancement Series: The MPDS Stroke Protocol

National Guideline Clearinghouse
http://www.guideline.gov/summary/summary.aspx?doc_id=12972&nbr=6681&ss=6&xl=999

- Diagnosis and initial treatment of ischemic stroke

National Institute for Neurological Disorders and Stroke
http://www.ninds.nih.gov/
http://stroke.nih.gov/ - Know Stroke website

- NIH Stroke Scale
- NIH Stroke Scale Training DVD

National Stroke Association
www.stroke.org

- Guidelines
  - Building the Case for a Primary Stroke Center: A Resource Guide
- On-line Courses
  - For EMS providers: Stroke rapid response on-line or classroom training
- NIH Stroke Scale Exam, Scoring and Registration Service
- Stroke Nurse Education Modules
  - www.stroke.org/strokenurse
  - Developed in partnership with the American Association of Neuroscience Nurses. These accredited online modules are ideal for those who are new to stroke as well as for seasoned

stroke care providers committed to keeping their stroke knowledge and practice up-to-date. The completion of all 10 modules will result in the achievement of a minimum of eight contact hours consistent with The Joint Commission's requirements for core stroke team members.

North Carolina AHEC
www.ahecconnect.com/courses

- Dysphagia Assessment: A Screening Protocol for Stroke Patients
- Saving Lives: Understanding Stroke- 911 Telecommunicators
- Saving Lives: Understanding Stroke- EMS Providers

The Sullivan Group
http://thesullivangroup.com/hci/

- Web-based education that offers contact hours for both physicians and nurses. Most modules are 1 to 1.5 contact hours.

Utah Heart Disease and Stroke Prevention Program
www.hearthighway.org

- Provides local stroke public health and preventative information and resources.

Appendices

Utah State Stroke System

Acute Stroke Report to Receiving Facility

Reporting Physician | Date

Patient Name | Age

Current Medications

Family Contact | Cell Phone

DNR/DNI Status

Time of onset or last known normal

History How was this information acquired? Note progression of symptoms, or time course of any changes in physical examination.

Physical Presenting neurological signs of stroke and current deficits. Any associated seizure or migraine

National Institute of Health Stroke Scale (NIHSS) | Measured Current Weight

Heart Rate | Temperature | Glucose

Blood Pressure | Respiratory Rate | Oxygen LPM | SPO2

Treatment & Interventions including: BP management, medications given, procedures

Was IV rt-PA given? | Time of IV rt-PA Bolus | End Time IV rt-PA infusion

IV rt-PA Exclusion if not given

Lab Results

Diagnostic Imaging

ECG

ACUTE STROKE TREATMENT KIT

- 0.9% Sodium Chloride Inj (1)
- 18 G Angio-Cath (1) 2
- 22 G Angio-Cath (4)
- 10 mL Latex Free Leur-Lok syringe (2)
- 10 mL Leur-Lok Syringe (2)
- 10 mL 20G 1 ½ Latex Free Syringe with needle (2)
- 30 mL syringe with Leur-Lok Tip (2)
- Arterial Blood Sampling Kit (1)
- I.V. Start Pak (1)
- 18 G 1 Needle (5)
- 19 G 1 ½ Filter Needle (2)
- 25 G 5/8 Needle (1)
- Primary I. V. Administration Set Checkvalve, 2 Y-Injection Sites (3)
- Interlink System, Buretrol Add-On Set 17" (43 cm) 150 mL Valveless Burette Slide Clamp
- Lab Drawing Supplies (misc)
- Latex Powder-Free Exam Gloves (box)
- NIH Stroke Scale Instructions and Definitions
- rt-PA Dosing Chart (1)
- Alcohol Wipes (12)

MEDICATIONS

- Aspirin 325 mg rectal suppository
- Labetalol
- Hydralazine

Clot Buster Kit

Medications:	Quantity:	Order #:	Exp. Date:
Activase (Alteplase) 100mg	1	Mckesson 243-0254	
NS Flushes	4	Mckesson 278-0872	
Supplies:	**Quantity:**	**Ref. #:**	
Infusion Set	1	C72109E	
Primary IV Set	1	11961-68	
Insyte Autoguard 22GA, 1in x 2	2	BD 381423	
Insyte Autoguard 20 GA, 1.16in x 2	2	BD 381434	
Insyte Autoguard 20 GA, 1in x 2	2	BD 381433	
Insyte Autoguard 18 GA, 1.16in	2	BD 381444	
Insyte Autoguard 16 GA, 1.16in	2	BD 381454	
Clave Connector	3	11956	
10mL Syringes	4	BD 309604	
Sterile Latex Free IV Start	2	C. Health 01-9300	
Alcohol Preps	20	50730-30001-07	
Labels	4		
Pen	1		
Extension Set, 8 inch	1	Lifeshield 19197	
Transfer Needles	4		
18 G Needle	4	BD 305195	
3-Way Large Bore Stopcock	2	Baxter 2C6201	

IV TPA Consideration & Eligibility Checklist for Acute Ischemic Stroke

Today's date ___ / ___ / _____
Onset of stroke symptoms: Date ___ / ___ / _____ Time ____ : ____
- ☐ Symptoms were witnessed or self-observed at time of onset
- ☐ "Time of onset" is when patient was last known at baseline

Latest acceptable time for TPA administration: Time ____ : ____

Eligibility Criteria (ALL boxes must be checked before IV TPA can be considered):

- ☐ Age 18 years or older
- ☐ Clinical diagnosis of ischemic stroke causing acute, measurable neurological deficits (NIHSS ≥ 4) that are NOT rapidly improving. **NIHSS = _____ (worksheet attached)**
- ☐ Time of symptom onset well established to be less than 180 minutes before treatment to begin
- ☐ No evidence of intracranial hemorrhage on noncontrast head CT
- ☐ No high clinical suspicion of subarachnoid hemorrhage even with normal CT
- ☐ No active internal bleeding (e.g. gastrointestinal or urinary) within the past 21 days
- ☐ Platelet count ≥100,000/mm^3
- ☐ If receiving heparin in previous 48 hours, aPTT must be in normal range
- ☐ If recent use of anticoagulant (e.g. warfarin sodium), INR ≤ 1.7
- ☐ No intracranial surgery, serious head trauma, or previous ischemic stroke within the past 3 months
- ☐ No history of intracranial hemorrhage, arteriovenous malformation, aneurysm or brain lesion (tumor)
- ☐ No major surgery or serious trauma within the past 14 days
- ☐ No lumbar puncture within the past 7 days
- ☐ On repeated measurement, systolic BP <185mm Hg or diastolic BP <110mm Hg at time of treatment OR hypertension NOT requiring aggressive treatment to reduce BP to within these limits
- ☐ Serum glucose >50 or <400 mg/dL
- ☐ No arterial puncture at non-compressible site within the past 7 days
- ☐ No witnessed seizure at stroke onset
- ☐ No acute myocardial infarction within last 3 months
- ☐ Not a pregnant or lactating female
- ☐ TPA consent form signed by patient or proxy OR best clinical judgment rendered if patient is unable to give consent and relative or proxy is not immediately available and would delay treatment.

RELATIVE CONTRAINDICATIONS: Final decision to administer TPA will be made by the on-call Neurologist.

- ☐ Severe neurological deficit (NIHSS >22)
- ☐ Early CT signs in area of suspected acute infarction

ALTERNATE TREATMENT: Patient may be eligible for intra-arterial (IA) TPA or mechanical removal if symptoms persist for up to 6 or 8 hours, respectively, from onset (may be longer for posterior circulation stroke). Contact the on-call Interventional Radiologist if patient cannot receive IV TPA, as soon as possible, to determine eligibility.

IV TPA ADMINISTERED. TIME ____ : ____

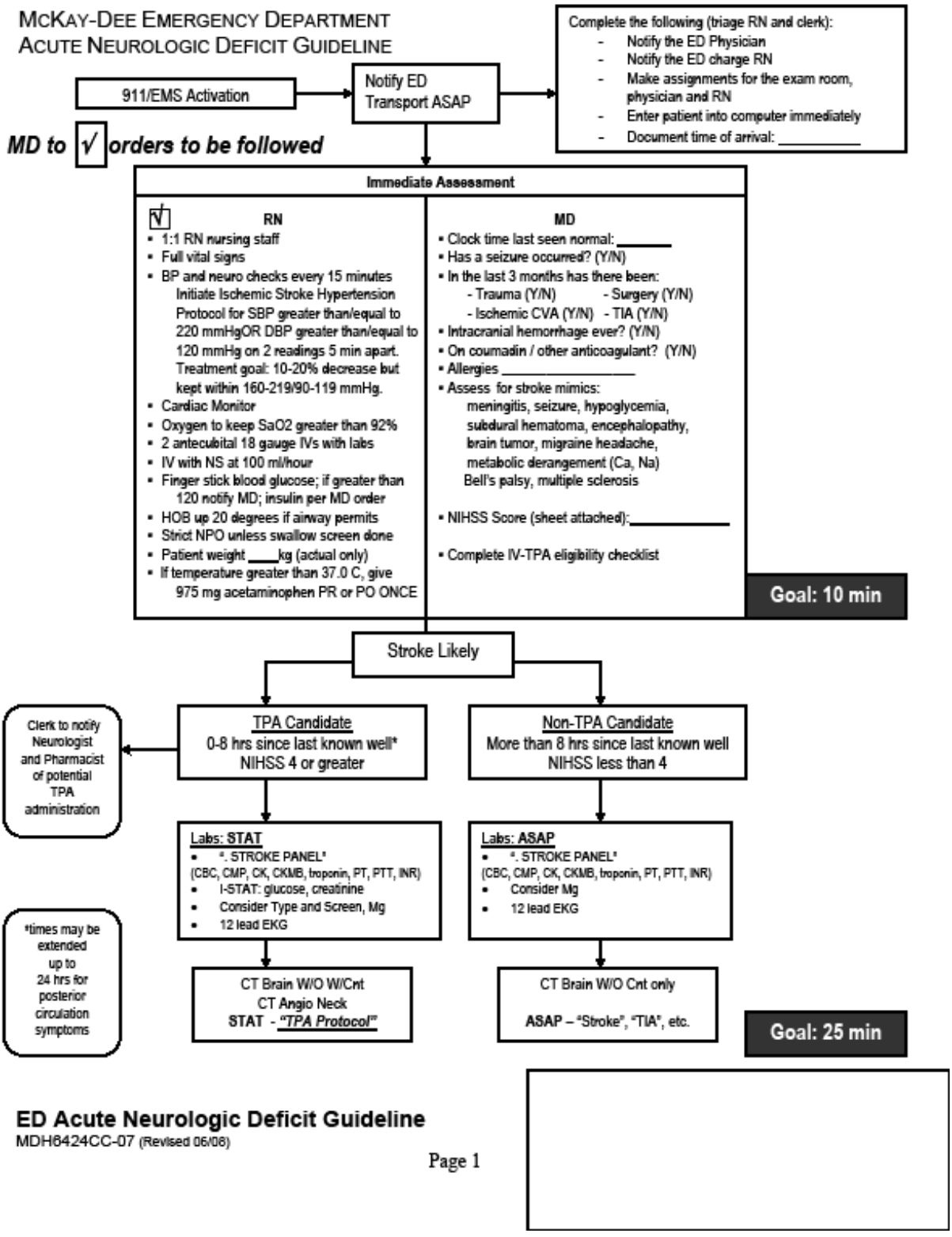
IV TPA NOT ADMINISTERED BECAUSE:

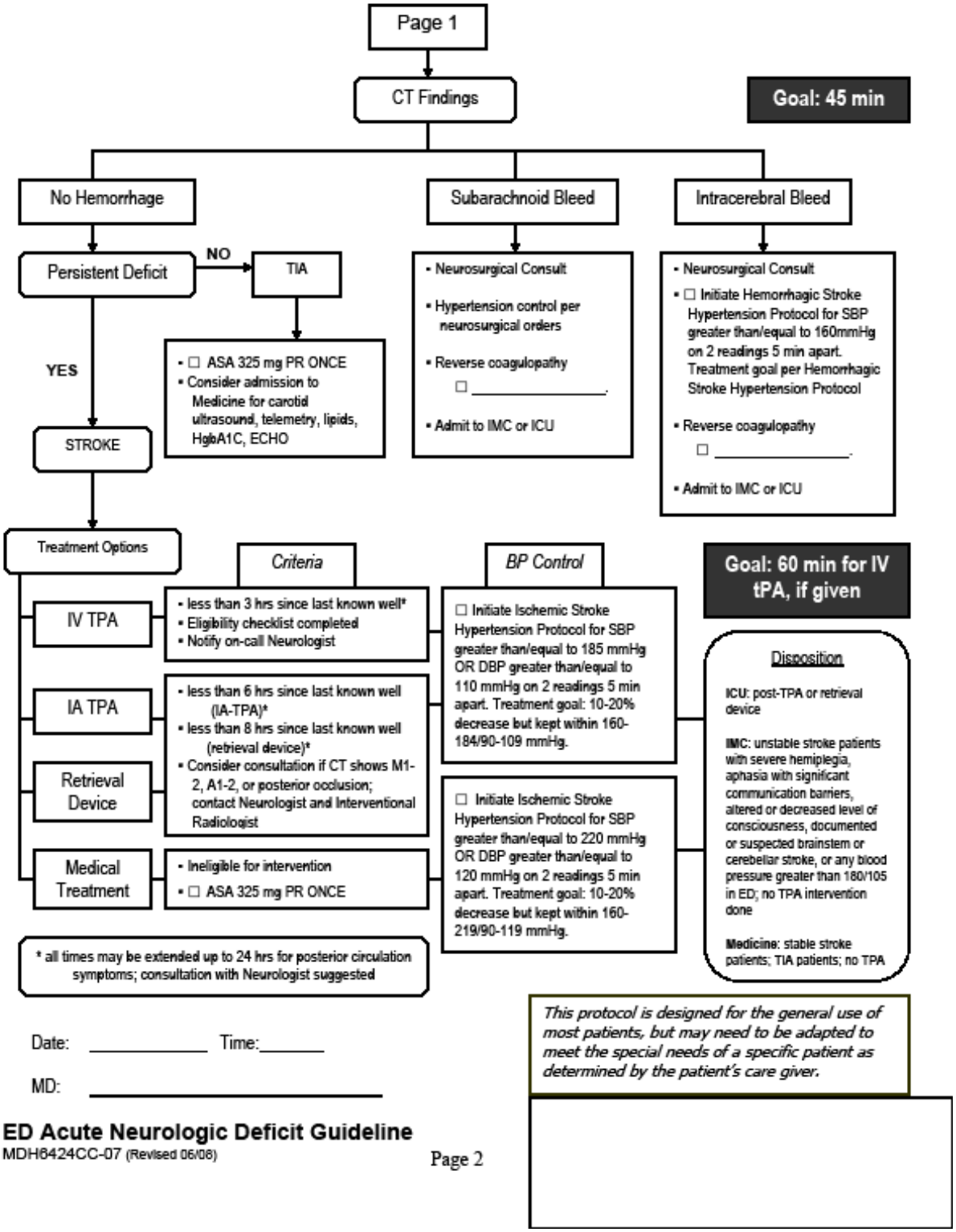
- ☐ Patient / family refuses TPA treatment
- ☐ CT findings contraindicate TPA
- ☐ Other _____
- ☐ Symptoms resolved, rapidly improving or too mild
- ☐ Delay in patient arrival. Outside 3-hour window.
- ☐ Treated with IA TPA or mechanical device

Completed by _____, MD Date _____

IV TPA Eligibility Checklist for Acute Ischemic Stroke

MDH6237CC-05 (Revised 06/08)


McKay-Dee Emergency Department
Acute Neurologic Deficit Guideline
911/EMS Activation
Notify ED Transport ASAP
Complete the following (triage RN and clerk):
- Notify the ED Physician
- Notify the ED charge RN
- Make assignments for the exam room, physician and RN
- Enter patient into computer immediately
- Document time of arrival: _____
MD to √ orders to be followed
Immediate Assessment
√ RN
• 1:1 RN nursing staff
• Full vital signs
• BP and neuro checks every 15 minutes Initiate Ischemic Stroke Hypertension Protocol for SBP greater than/equal to 220 mmHgOR DBP greater than/equal to 120 mmHg on 2 readings 5 min apart. Treatment goal: 10-20% decrease but kept within 160-219/90-119 mmHg.
• Cardiac Monitor
• Oxygen to keep SaO2 greater than 92%
• 2 antecubital 18 gauge IVs with labs
• IV with NS at 100 ml/hour
• Finger stick blood glucose; if greater than 120 notify MD; insulin per MD order
• HOB up 20 degrees if airway permits
• Strict NPO unless swallow screen done
• Patient weight ____kg (actual only)
• If temperature greater than 37.0 C, give 975 mg acetaminophen PR or PO ONCE
MD
• Clock time last seen normal: _____
• Has a seizure occurred? (Y/N)
• In the last 3 months has there been:
- Trauma (Y/N) - Surgery (Y/N)
- Ischemic CVA (Y/N) - TIA (Y/N)
• Intracranial hemorrhage ever? (Y/N)
• On coumadin / other anticoagulant? (Y/N)
• Allergies _____
• Assess for stroke mimics:
meningitis, seizure, hypoglycemia, subdural hematoma, encephalopathy, brain tumor, migraine headache, metabolic derangement (Ca, Na) Bell's palsy, multiple sclerosis
• NIHSS Score (sheet attached):_____
• Complete IV-TPA eligibility checklist
Goal: 10 min
Stroke Likely
TPA Candidate
0-8 hrs since last known well*
NIHSS 4 or greater
Non-TPA Candidate
More than 8 hrs since last known well
NIHSS less than 4
Clerk to notify Neurologist and Pharmacist of potential TPA administration
Labs: STAT
• *. STROKE PANEL*
(CBC, CMP, CK, CKMB, troponin, PT, PTT, INR)
• I-STAT: glucose, creatinine
• Consider Type and Screen, Mg
• 12 lead EKG
Labs: ASAP
• *. STROKE PANEL*
(CBC, CMP, CK, CKMB, troponin, PT, PTT, INR)
• Consider Mg
• 12 lead EKG
*times may be extended up to 24 hrs for posterior circulation symptoms
CT Brain W/O W/Cnt
CT Angio Neck
STAT - "TPA Protocol"
CT Brain W/O Cnt only
ASAP – "Stroke", "TIA", etc.
Goal: 25 min
ED Acute Neurologic Deficit Guideline
MDH6424CC-07 (Revised 06/08)
Page 1


Page 1
CT Findings
Goal: 45 min
No Hemorrhage
Subarachnoid Bleed
Intracerebral Bleed
Persistent Deficit
NO
TIA
YES
STROKE
• ☐ ASA 325 mg PR ONCE
• Consider admission to Medicine for carotid ultrasound, telemetry, lipids, HgbA1C, ECHO
• Neurosurgical Consult
• Hypertension control per neurosurgical orders
• Reverse coagulopathy
☐ _____.
• Admit to IMC or ICU
• Neurosurgical Consult
• ☐ Initiate Hemorrhagic Stroke Hypertension Protocol for SBP greater than/equal to 160mmHg on 2 readings 5 min apart. Treatment goal per Hemorrhagic Stroke Hypertension Protocol
• Reverse coagulopathy
☐ _____.
• Admit to IMC or ICU
Treatment Options
Criteria
BP Control
Goal: 60 min for IV tPA, if given
IV TPA
• less than 3 hrs since last known well*
• Eligibility checklist completed
• Notify on-call Neurologist
☐ Initiate Ischemic Stroke Hypertension Protocol for SBP greater than/equal to 185 mmHg OR DBP greater than/equal to 110 mmHg on 2 readings 5 min apart. Treatment goal: 10-20% decrease but kept within 160-184/90-109 mmHg.
IA TPA
Retrieval Device
• less than 6 hrs since last known well (IA-TPA)*
• less than 8 hrs since last known well (retrieval device)*
• Consider consultation if CT shows M1-2, A1-2, or posterior occlusion; contact Neurologist and Interventional Radiologist
☐ Initiate Ischemic Stroke Hypertension Protocol for SBP greater than/equal to 220 mmHg OR DBP greater than/equal to 120 mmHg on 2 readings 5 min apart. Treatment goal: 10-20% decrease but kept within 160-219/90-119 mmHg.
Medical Treatment
• Ineligible for intervention
• ☐ ASA 325 mg PR ONCE
Disposition
ICU: post-TPA or retrieval device
IMC: unstable stroke patients with severe hemiplegia, aphasia with significant communication barriers, altered or decreased level of consciousness, documented or suspected brainstem or cerebellar stroke, or any blood pressure greater than 180/105 in ED; no TPA intervention done
Medicine: stable stroke patients; TIA patients; no TPA
* all times may be extended up to 24 hrs for posterior circulation symptoms; consultation with Neurologist suggested
Date: _____ Time:_____
MD: _____
ED Acute Neurologic Deficit Guideline
MDH6424CC-07 (Revised 06/08)
Page 2
This protocol is designed for the general use of most patients, but may need to be adapted to meet the special needs of a specific patient as determined by the patient's care giver.

MCKAY-DEE EMERGENCY DEPARTMENT
STROKE PROTOCOL

ALL orders to be completed

Allergies: _____

Monitoring

- Obtain weight
- Ensure 2 large bore IVs in place – 18 gauge
- Place Foley catheter before tPA started
- NPO
- Bedrest
- Continuous cardiac monitoring
- Vital signs and neuro checks q 15 minutes for 2 hours after start of tPA infusion
- Notify physician if SBP≥180 or <120 mmHg, DBP≥105 or <60 mmHg, changes in neurologic status, OR any signs of bleeding
- Transfer patient to ICU for continued monitoring

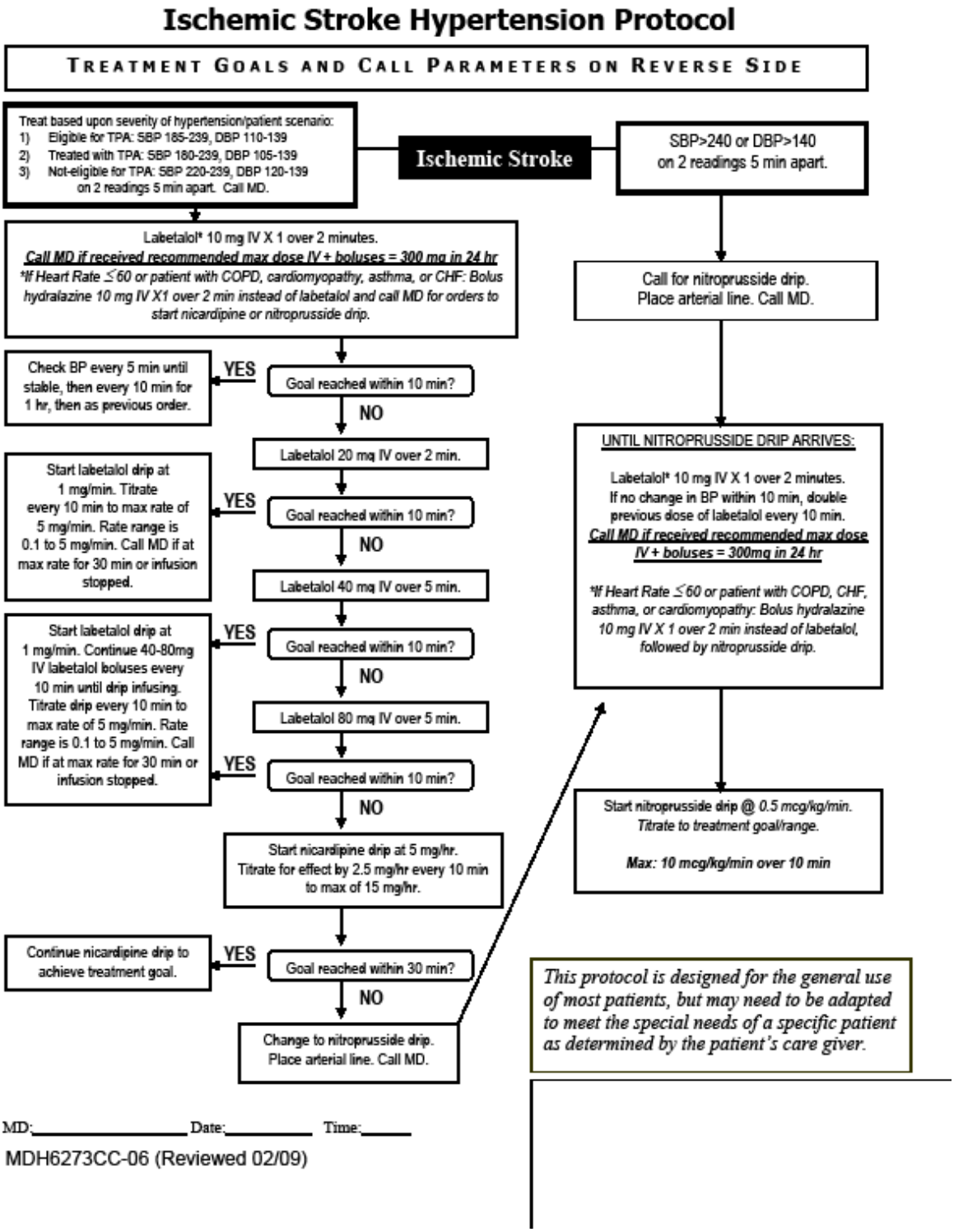
Medications

- Administer tPA (alteplase) as follows:
  - Total Dose (see chart on back): Weight in kg _____X 0.9 mg = _____mg (Total dose not to exceed 90 mg).
  - Bolus Dose: 10% of total calculated dose =_____ mg IV over 1-2 minutes using infusion pump
  - Document time infusion started: _____
  - Infusion Dose: 90 % of total calculated dose = _____ mg IV over 60 minutes using infusion pump. Flush line with 50 ml NS after completion of tPA.
- Initiate Ischemic Stroke Hypertension Protocol for SBP ≥180 mmHg or DBP≥105 mmHg on two separate readings 5 min apart. Treatment goal: 10-20% decrease but kept within 160-179/90-104 mmHg.
- No heparin, enoxaparin, warfarin, clopidogrel, or aspirin for 24 hours after completion of tPA infusion
- IV fluids: Sodium Chloride 0.9% @ 100 ml/hour after tPA infusion completed

Date: _____ Time:_____

MD: _____

IV tPA (alteplase) Orders
MDH6274CC-06 (Reviewed 06/08)


Ischemic Stroke Hypertension Protocol
TREATMENT GOALS AND CALL PARAMETERS ON REVERSE SIDE
Treat based upon severity of hypertension/patient scenario:
1) Eligible for TPA: SBP 185-239, DBP 110-139
2) Treated with TPA: SBP 180-239, DBP 105-139
3) Not-eligible for TPA: SBP 220-239, DBP 120-139
on 2 readings 5 min apart. Call MD.
Ischemic Stroke
SBP>240 or DBP>140
on 2 readings 5 min apart.
Labetalol* 10 mg IV X 1 over 2 minutes.
Call MD if received recommended max dose IV + boluses = 300 mg in 24 hr
*If Heart Rate ≤60 or patient with COPD, cardiomyopathy, asthma, or CHF: Bolus hydralazine 10 mg IV X1 over 2 min instead of labetalol and call MD for orders to start nicardipine or nitroprusside drip.
Call for nitroprusside drip.
Place arterial line. Call MD.
Check BP every 5 min until stable, then every 10 min for 1 hr, then as previous order.
YES
Goal reached within 10 min?
NO
Labetalol 20 mg IV over 2 min.
Start labetalol drip at 1 mg/min. Titrate every 10 min to max rate of 5 mg/min. Rate range is 0.1 to 5 mg/min. Call MD if at max rate for 30 min or infusion stopped.
YES
Goal reached within 10 min?
NO
Labetalol 40 mg IV over 5 min.
Start labetalol drip at 1 mg/min. Continue 40-80mg IV labetalol boluses every 10 min until drip infusing. Titrate drip every 10 min to max rate of 5 mg/min. Rate range is 0.1 to 5 mg/min. Call MD if at max rate for 30 min or infusion stopped.
YES
Goal reached within 10 min?
NO
Labetalol 80 mg IV over 5 min.
YES
Goal reached within 10 min?
NO
Start nicardipine drip at 5 mg/hr.
Titrate for effect by 2.5 mg/hr every 10 min to max of 15 mg/hr.
Continue nicardipine drip to achieve treatment goal.
YES
Goal reached within 30 min?
NO
Change to nitroprusside drip.
Place arterial line. Call MD.
UNTIL NITROPRUSSIDE DRIP ARRIVES:
Labetalol* 10 mg IV X 1 over 2 minutes.
If no change in BP within 10 min, double previous dose of labetalol every 10 min.
Call MD if received recommended max dose IV + boluses = 300mg in 24 hr
*If Heart Rate ≤60 or patient with COPD, CHF, asthma, or cardiomyopathy: Bolus hydralazine 10 mg IV X 1 over 2 min instead of labetalol, followed by nitroprusside drip.
Start nitroprusside drip @ 0.5 mcg/kg/min.
Titrate to treatment goal/range.
Max: 10 mcg/kg/min over 10 min
This protocol is designed for the general use of most patients, but may need to be adapted to meet the special needs of a specific patient as determined by the patient's care giver.
MD:_____ Date:_____ Time:_____
MDH6273CC-06 (Reviewed 02/09)

Ischemic Stroke Hypertension Protocol

Patient Scenario	Eligible for TPA (ED)	Treated with TPA (ED, ICU)	Not eligible for TPA (ED, IMC)
BP to Treat	SBP ≥185 or DBP ≥110	SBP ≥180 or DBP ≥105	SBP ≥220 or DBP ≥120
BP Monitoring (For patients without an arterial line)	AFTER BOLUSES: - every 5 min until stable, then every 10 min for 1 hr, then per previous order DURING CONTINUOUS INFUSION: - every 5 min during active titration of infusion - every 10 min on stable infusion rate		
Treatment Goal/Range	SBP 160-184 DBP 90-109 (10-20% decrease)	SBP 160-179 DBP 90-104 (10-20% decrease)	SBP 160-219 DBP 90-119 (10-20% decrease)
Call MD for:	**BP <120/60 mmHg at any point.** **Stop any antihypertensive drips if running.**		

This protocol is designed for the general use of most patients, but may need to be adapted to meet the special needs of a specific patient as determined by the patient's care giver.

MDH6273CC-06 (Reviewed 02/09)

INFORMED CONSENT FOR ADMINSTRATION OF tPA (Alteplase) FOR ACUTE ISCHEMIC STROKE

You (or your relative) have a stroke caused by blockage of an artery to the brain by a blood clot. Many patients become more seriously ill immediately after the stroke, even with state-of-the-art treatment. Of those who survive, most patients will have some degree of permanent disability.

You might benefit from a drug given by vein, called alteplase (tPA), that dissolves blood clots. This drug is approved by the Food and Drug Administration (FDA) for this purpose. This form explains the most common possible benefits and the possible risks of treatment with alteplase.

The primary benefit can be improved recovery from stroke. The chance of stroke patients ending up with little or no residual disability can be improved from about 38% without the drug, to about 50% with the drug. However, there is no guarantee that alteplase will help you.

Bleeding into the brain is the major complication of treatment with alteplase, and occurs in about 6 out of 100, of whom 3 will die. The risk of serious bleeding is less than 1 in 100 without the medicine. With or without the treatment, 1 of 5 stroke patients will die in the months following their stroke. Other side effects include nausea, allergic reactions, bleeding, or bruising.

Statement of consent:
I acknowledge that my medical condition and this proposed medication have been explained to my satisfaction, and that all of my questions asked about the medication and its associated risks have been answered in a manner acceptable to me. (If the patient is unable to give consent, a close relative may do so).

☐ I desire to receive alteplase. I accept the risk of substantial and serious harm, if any, in hopes of obtaining the desired beneficial effects of the medication. I understand that admission to the Intensive Care Unit (ICU) will be required for at least 24 hours. In addition, I agree to any invasive procedures and administration of blood products which may be required if serious complications arise, unless specifically revoked in writing by myself or my representative, whom I name below.

☐ I refuse to receive alteplase. I understand that, in doing so, I am refusing an approved, potentially beneficial treatment for acute stroke.

I certify that the time of onset of symptoms of stroke was _____.

_____ OR _____ _____
Patient or Relative Representative Printed Name

_____ _____
MD Witness

Date: _____ Time: _____

(Please indicate if legal documents are available for representative ☐)

IV tPA Consent
MDH6236CC-05 (Reviewed 06/08)

Patient Name: _____ M or F Current Medications:_____
Allergies: _____Date:_____Contraindication to IV contrast ☐ Yes ☐ No

Goals of Care →→→	Triage, History, Less than **10 minutes**	Determination if in origin Less than **10 minutes**	Determination if "ISCHEMIC STROKE" Less than **45 minutes** from arrival to ED Goal is "door to reperfusion" **60 minutes**
Time Line	TriageTime:_____ Time of onset :_____ ED Room Time: _____ ED Doctor in at:_____	Stroke Team paged Time:_____ Neurologist returned call Time:_____ Neurologist in ED Time:_____	Hemorrhagic Stroke? ☐Yes ☐No TIA ? ☐Yes ☐No If answer is yes to either of the above then no reperfusion will take place Ischemic Stroke? ☐Yes ☐No **If yes, time reperfusion decision made**_____ **Time IR team called**_____**Time IR team ready**_____
CT and Labs	☐ **CT brain per stroke protocol** Time of scan:_____Time scan read:_____ **LABS:** ☐ CBC ☐ CMP ☐ PT, INR		☐ IV t-PA (activase) ordered Conventional Protocol ☐ IV/IA t-PA (activase)ordered Bridging Protocol
Assess-ments, Treatment and Medica-tions	**History:** ☐ TIA ☐ CVA **Risk Factors:** Age: _____ Wt: _____ ☐Family hx ☐Dyslipidemia ☐Hypertension ☐Smoker ☐Diabetes ☐Atrial Fib. ☐PVD ☐CAD/prior MI Oxygen_____L. Heart monitor_____rhythm	**NIH STROKE SCALE** (to be completed by MD) ☐Temp. greater than 37 C give Acetaminophen 1gm PO or rectal x 1 dose (PO only if swallow screening done) ☐Glucose greater than 120, Insulin per sliding scale _____units	☐ Exclusion criteria reviewed ☐ Consents signed Time:_____ ☐ Foley catheter placed prior to infusion (MD request) ☐ t-PA (activase) 0.9 mg/kg, 90 mg max., 10% over 1-2 min. remaining infused over 60 min. ☐ t-PA (activase) 0.6 mg/kg, 60 mg max., 10% over 1-2 min. remaining infused over 60 min. ☐ t-PA (activase) bolus_____ ☐ t-PA (activase) infusion_____ **After CT** ☐ EKG Time:_____ ☐ Chest x-ray if indicated: Time:_____ ☐ Swallow screening done ☐pass ☐fail ☐ Aspirin 325 mg PO or rectal x 1 dose if t-PA (activase) is not given (PO only if swallow screening done) ***No heparin, warfarin, plavix, aggrenox, or aspirin for 24 hours from the start of the t-PA infusion**
VS and Neuro checks q 15 minutes	Time: _____ BP_____/____ HR _____ Resp_____ Temp _____ O_2 sat_____ Neuro check_____	☐ See monitor sheet for automatically recorded vital signs	
IV's	☐ IV 18 gauge NS 50 ml/hr Site_____	☐ 2nd IV site NS TKO Site_____	Other: / Other:
Notes	If t-PA (activase) is not given, why?_____		
	Disposition: transfer to a Critical Care Unit (excluding CVU) if t-PA (activase) given ☐ Time transferred_____Room #_____ ☐ Accepting Nurse_____ ☐ Brain Attack Packet sent with patient ☐ Teaching Packet given to patient/family		Patient Stamp
	Physician Signature_____ Nurse Signature_____		

Acute "STROKE" Flow Sheet/Physician Order
Intermountain Urban South Region Emergency Departments

USRNUR0675-8/08

Intermountain SV
Utah Valley Regional
Medical Center

Thrombolytic Therapy Checklist for Ischemic Stroke

All of the YES boxes and all of the NO boxes must be checked before thrombolytic therapy can be given (with exception for IA t-PA to the * items below).

Inclusion Criteria (all YES boxes must be checked before treatment):

YES

- ❑ Age 18 years or older
- ❑ Clinical diagnosis of ischemic stroke causing a measurable neurological deficit (NIH Stroke Scale >4)
- ❑ Time of symptom onset well established to be less than 180 minutes before treatment would begin

Exclusion Criteria (all NO boxes must be checked before treatment):

NO

- ❑ Evidence of intracranial hemorrhage on noncontrast head CT
- ❑ Only minor or rapidly improving stroke symptoms
- ❑ High clinical suspicion of subarachnoid hemorrhage even with normal CT
- ❑ Active internal bleeding (gastrointestinal bleeding or urinary bleeding within last 21 days)
- ❑ Known bleeding diathesis, including but not limited to
  - Platelet count <100,000/mm
  - Patient has received heparin within 48 hours and had an elevated PTT
  - Recent use of anticoagulant (warfarin sodium) and elevated PT>15 sec. or INR>1.7
- ❑ Within 3 months of intracranial surgery, serious head trauma, or previous stroke
- ❑ Within 14 days of major surgery or serious trauma
- ❑ Recent arterial puncture at non-compressible site within 7 days
- ❑ Lumbar puncture within 7 days
- ❑ History of intracranial hemorrhage, arteriovenous malformation, or aneurysm
- ❑ Recent acute myocardial infarction
- ❑ On repeated measurements, systolic pressure >185mm Hg or diastolic pressure >110 mm Hg at time of treatment, requiring aggressive treatment to reduce blood pressure to within these limits
- ❑ Serum glucose <50 or >400

IA will be considered in the following cases:

*Recent surgery
*Elevated INR
*3 to 6 hour time frame
*Posterior circulation (basilar strokes) <24 hours

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Utah Valley Regional
Medical Center

Physician IV t-PA Order
Conventional IV t-PA Protocol

Physician Orders - **to be tubed to pharmacy STAT at station 41**
Call pharmacy at 2381 to verify that t-PA (activase) is needed, give patient name and weight

Date:_____ Time:_____

Allergies:_____

Patient's Weight:_____

❑ Administer t-PA (activase) as follows:

- **Coventional IV t-PA (activase) protocol: 0.9 mg/kg with 90 mg maximum:** _____mg.
- Give as bolus 10% of total calculated dose IV **over 1 - 2 minutes** using infusion pump: _____mg.
- Document time infusion started
- Infuse remaining dose **over 60 minutes** using infusion pump: _____mg.

MD Signature:_____Date:_____

UVMD2291-4/06

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Utah Valley Regional
Medical Center

INFORMED CONSENT FOR ADMINSTRATION OF ACTIVASE (t-PA) FOR ACUTE ISCHEMIC STROKE

You (or your relative) have a stroke caused by blockage of an artery to the brain by a blood clot. Many patients become more seriously ill immediately after the stroke, even with state-of-the-art treatment. Of those who survive, most patients will have some degree of permanent disability.

You (or your relative) might benefit from a drug given by vein, called Activase (t-PA), that dissolves blood clots. This drug is approved by the Food and Drug Administration (FDA) for this purpose. We want you to know about the possible benefits and the possible risks of treatment with Activase.

The primary benefit is improved recovery from stroke. The chance of stroke patients ending up with little or no residual disability can be improved from about 38% without the drug, to about 50% with the drug. However, there is no guarantee that Activase will help you.

Bleeding into the brain is the major complication of treatment with Activase, and occurs in about 6 out of 100, of whom 3 will die. The risk of serious bleeding is less than 1 in 100 without the medicine. With or without the treatment, 1 of 5 stroke patients will die in the months following their stroke. Other complications of the medicine can be nausea, allergic reactions, bleeding, or bruising.

Statement of consent:
I acknowledge that my medical condition and the proposed medication has been explained to my satisfaction, and that all of my questions asked about the medication and it's attendant risks have been answered in a manner acceptable to me. (If the patient is unable to give consent, a close relative may do so).

☐ I desire to receive Activase. I accept the risk of substantial and serious harm, if any, in hopes of obtaining the desired beneficial effects of the medication.

☐ I refuse to receive Activase. I understand that, in doing so, I am refusing the only approved treatment for acute stroke.

I certify that the time of onset of symptoms of stroke was _____.

_____ _____
Patient or Relative Date

_____ _____
Doctor Witness

USRMR9015-4/06

PHYSICIAN'S ORDERS

GENERIC EQUIVALENT MAY BE SUBSTITUTED UNLESS CHECKED ☐

1. Admit to ICU
2. **Diagnosis:** Ischemic Stroke
3. **Vital signs and neuro checks:** q 15 min. for 2 hrs post t-PA, q 30 min. X 6 hrs., q 1hr X 16 hrs. Call MD if any neurological changes
4. **Respiratory:** ☐ Oxygen by nasal cannula at 2L prn to keep O2 sats > 92% ☐ Incentive Spriometry
5. **Allergies:**
6. **Medications: (No Heparin, Coumadin, Plavix, Aggenox or Aspirin for 24 hours after treatment)**

   _____

   _____
7. **BP management:** Goal is to maintain a **systolic** less than 180 mm Hg and/or **diastolic** less than 105
   for systolic 180-230 mm Hg and/ordiastolic 105-140 mm Hg or mean arterial greater than or equal to 130 mm Hg, institute IV labetalol, esmolol, enalapril
   - ☐ Labetalol 10-40 mg IV q 10 min. for maximum of 100 mg/hr to maintain BP parameters
   - ☐ Labetalol continuous drip (2-8 mg/min) to maintain BP parameters
   - ☐ Cardene (nicardipene) start with 5 mg/hr IV continuous infusion, titrate up to 15 mg/hr to maintain BP parameters
   - ☐ Brevibloc (esmolol) 500 mcg/kg IV as a load: maintenance use, 50-200 mcg/kg/min IV
   - ☐ Hydralazine 10-20 mg IV bolus q 4 hours PRN to maintain BP parameters
   - ☐ Vasotec (enalapril) 0.625-1.25 mg IV q 6 hours PRN to maintain BP parameters

   for systolic greater than 230 mm Hg and/or diastolic greater than 140 mm Hg on 2 readings 5 min. apart, start Nipride.
   - ☐ Nipride (nitroprusside) 0.5-8 mcg/kg/min IV titrated to maintain BP parameters
8. **IV:** NS at _____mL/hr or _____
9. **Diet:** NPO until swallow evaluation is performed (no NG tube placement for 24 hours)
   ☐ Nursing swallow screen on admit
10. **Blood Glucose:** ☐ glucometer checks q _____ hrs ☐ Consult Diabetes Management Team
11. **Activity:** ☐ Bedrest with HOB at 30 degrees ☐ Other_____
12. **Precautions:** aspiration, seizure, falls, bleeding (evaluate urine, stool, emessis or other secretions for blood)
13. **DVT Prophylaxis:**
    ☐ Sequential Compression Device ☐ Other_____
14. **GI Prophylaxis:**
    ☐ Pepcid 20mg PO q 12 hours if able to swallow, IV if not
    ☐ Pepcid 20mg daily if creatinine higher than 2.0 mg/dL
    ☐ Protonix 40mg PO daily if able to swallow or IV if not
15. **Labs:** Labs on admission: ☐ CBC ☐ CMP ☐ PT/INR ☐ CK ☐ Troponin
    Labs in the am (for next day only): ☐ CBC ☐ CMP ☐ PT/INR ☐ Drug Screen ☐ Fasting Lipoprotein
    ☐ Fasting lipid panel ☐ Fasting Homocysteine ☐ C reactive protein ☐ ESR ☐ ANA ☐ A1C
16. **Diagnostic tests:** ☐ MRI brain ☐ MRA (Head & Neck) ☐ TEE ☐ TTE ☐ CXR ☐ Apnea link
    ☐ EkG ☐ 4 Vessel Cerebral Angiogram
17. **Consults:**
    ☐ Swallow evaluation ☐ Cardiology ☐ Neurology
    ☐ Rehab evaluation (Dr. Hilmo) ☐ Occupational Therapy
    ☐ Physical Therapy ☐ Speech Therapy
18. **Education:** ☐ Stroke Education ☐ Smoking Cessation
    ☐ Risk Factors_____
19. **Code Status:** ☐ Full ☐ DNR

Date: Time: M.D. Signature

Intermountain
Urban South Region

USR2289 11/06

Ischemic Stroke
Post Treatment Orders

The following four pages consist of mixing directions for t-PA treatment (recombinant tissue plasminogen activator known as Activase or Alteplase). The directions can be kept separately in a location designated for t-PA mixing. Please read **all** directions before mixing or using t-PA.

Activase (t-PA) Dosing Regimen for Acute Ischemic Stroke

Weight (lb)	Weight (kg)	Total Dose (mg=mL)	Bolus Dose (>1 min) (mg=mL)	Infusion Dose (>60 min) (mg=mL)	Unused Quantity (mg=mL)
90	40.9	36.8	3.7	33.1	63.2
92	41.8	37.6	3.8	33.8	62.4
94	42.7	38.4	3.8	34.6	61.6
96	43.6	39.2	3.9	35.3	60.8
98	44.5	40.1	4	36.1	59.9
100	45.5	41	4.1	36.9	59
102	46.4	41.8	4.2	37.6	58.2
104	47.3	42.6	4.3	38.3	57.4
106	48.2	43.4	4.3	39.1	56.6
108	49.1	44.2	4.4	39.8	55.8
110	50	45	4.5	40.5	55
112	50.9	45.8	4.6	41.2	54.2
114	51.8	46.6	4.7	41.9	53.4
116	52.7	47.4	4.7	42.7	52.6
118	53.6	48.2	4.8	43.4	51.8
120	54.5	49.1	4.9	44.2	50.9
122	55.5	50	5	45	50
124	56.4	50.8	5.1	45.7	49.2
126	57.3	51.6	5.2	46.4	48.4
128	58.2	52.4	5.2	47.2	47.6
130	59.1	53.2	5.3	47.9	46.8
132	60	54	5.4	48.6	46
134	60.9	54.8	5.5	49.3	45.2
136	61.8	55.6	5.6	50	44.4
138	62.7	56.4	5.6	50.8	43.6
140	63.6	57.2	5.7	51.5	42.8
142	64.5	58.1	5.8	52.3	41.9
144	65.5	59	5.9	53.1	41
146	66.4	59.8	6	53.8	40.2
148	67.3	60.6	6.1	54.5	39.4
150	68.2	61.4	6.1	55.3	38.6
152	69.1	62.2	6.2	56	37.8
154	70	63	6.3	56.7	37
156	70.9	63.8	6.4	57.4	36.2
158	71.8	64.6	6.5	58.1	35.4
160	72.7	65.4	6.5	58.9	34.6
162	73.6	66.2	6.6	59.6	33.8
164	74.5	67.1	6.7	60.4	32.9
166	75.5	68	6.8	61.2	32
168	76.4	68.8	6.9	61.9	31.2
170	77.3	69.6	7	62.6	30.4
172	78.2	70.4	7	63.4	29.6
174	79.1	71.2	7.1	64.1	28.8
176	80	72	7.2	64.8	28
178	80.9	72.8	7.3	65.5	27.2
180	81.8	73.6	7.4	66.2	26.4
182	82.7	74.4	7.4	67	25.6
184	83.6	75.2	7.5	67.7	24.8
186	84.5	76.1	7.6	68.5	23.9
188	85.5	77	7.7	69.3	23
190	86.4	77.8	7.8	70	22.2
192	87.3	78.6	7.9	70.7	21.4
194	88.2	79.4	7.9	71.5	20.6
196	89.1	80.2	8	72.2	19.8
198	90	81	8.1	72.9	19
200	90.9	81.8	8.2	73.6	18.2
202	91.8	82.6	8.3	74.3	17.4
204	92.7	83.4	8.3	75.1	16.6
206	93.6	84.2	8.4	75.8	15.8
208	94.5	85.1	8.5	76.6	14.9
210	95.5	86	8.6	77.4	14
212	96.4	86.8	8.7	78.1	13.2
214	97.3	87.6	8.8	78.8	12.4
216	98.2	88.4	8.8	79.6	11.6
218	99.1	89.2	8.9	80.3	10.8
≥220	≥100	90	9	81	10

Using Activase (t-PA)

Activase treatment (t-PA) should only be initiated within 3 hours after the onset of stroke symptoms, and after exclusion of intracranial hemorrhage by a cranial computerized tomography (CT) scan or other diagnostic imaging method sensitive for the presence of hemorrhage.

The total dose of Activase for treatment of Acute Ischemic Stroke should NOT exceed 90 mg.

The recommended dose of Activase for acute ischemic stroke is 0.9 mg/kg (maximum 90 mg) infused over 60 minutes, with 10% of the total dose administered as an initial intravenous bolus over 1 minute.

Patient Follow-Up

- Monitor vital signs and neurological status
- Maintain blood pressure ≤185/≤110 mmHg
- No anticoagulant or antiplatelet therapy for 24 hours following symptom onset
- Before anticoagulant or antiplatelet therapy is started, a follow-up CT scan should show no evidence of hemorrhage
- Pay special attention to potential bleeding sites (eg, catheter insertion site)

Contraindications of Using Activase (t-PA)

Activase therapy in patients with acute ischemic stroke is contraindicated in the following situations because of an increased risk of bleeding, which could result in significant disability or death:

- Evidence of intracranial hemorrhage on pretreatment evaluation
- Suspicion of subarachnoid hemorrhage on pretreatment evaluation
- Recent (within 3 months) intracranial or intraspinal surgery, serious head trauma, or previous stroke
- History of intracranial hemorrhage
- Uncontrolled hypertension at time of treatment (eg, >185 mmHg systolic or >110 mmHg diastolic)
- Seizure at the onset of stroke
- Active internal bleeding
- Intracranial neoplasm, arteriovenous malformation, or aneurysm
- Known bleeding diathesis, including but not limited to:
    - Current use of oral anticoagulants or an International Normalized Ratio (INR) >1.7 or a prothrombin time (PT) >15 seconds
    - Administration of heparin within 48 hours preceding the onset of stroke and an elevated activated partial thromboplastin time (aPTT) at presentation
    - Platelet count <100,000/mm^3

Following Activase Administration

The most common complication during t-PA (recombinant tissue plasminogen activator known as Activase or Alteplase) therapy is bleeding. There are 2 broad categories of bleeding: internal bleeding, involving intracranial and retroperitoneal sites, or the gastrointestinal, genitourinary, or respiratory tracts; and superficial or surface bleeding, which is mainly observed at invaded or disturbed sites such as arterial punctures or sites of recent surgery. Should bleeding occur that cannot be controlled by local pressure, the infusion of Activase and any concomitant heparin should be discontinued immediately.

Activase (t-PA) Dosing

The recommended dose is 0.9 mg/kg (not to exceed 90 mg total dose) infused over 60 minutes with 10% of the total dose administered as an initial intravenous bolus over 1 minute. Activase (recombinant tissue plasminogen activator known as t-PA or Alteplase) should be reconstituted only with Sterile Water for Injection, USP (SWFI), without preservatives. Do not use Bacteriostatic Water for Infection, USP. Since Activase contains no antibacterial preservatives, it should be reconstituted immediately before use. The solution may be used for intravenous administration within 8 hours following reconstitution when stored between 2 and 30°C (36-86°F). The reconstituted preparation results in a colorless to pale yellow transparent solution containing Activase 1 mg/mL. Use aseptic technique throughout.

Reconstitution of 100-mg Vials

(Reconstitution should be carried out using the transfer device provided. 100-MG VIALS DO NOT CONTAIN VACUUM.)

1. Remove the protective cap from one end of the transfer device and, keeping the vial of SWFI upright, insert the piercing pin vertically into the center of the stopper of the vial of SWFI.
2. Remove the protective cap from the other end of the transfer device. DO NOT INVERT THE VIAL OF SWFI.
3. Holding the vial of Activase upside-down, position it so that the center of the stopper is directly over the exposed piercing pin of the transfer device.
4. Push the vial of Activase down so that the piercing pin is inserted through the center of the Activase vial stopper.
5. Invert the 2 vials so that the vial of Activase is on the bottom (upright) and the vial of SWFI is upside-down, allowing the SWFI to flow down through the transfer device. Allow the entire contents of the vial of SWFI to flow into the Activase vial (approximately 0.5 mL of SWFI will remain in the diluents vial). Approximately 2 minutes are required for this procedure.
6. Remove the transfer device and the empty SWFI vial from the Activase vial. Safely discard both the transfer device and the empty diluents vial according to institutional procedures.
7. Swirl gently between palms to dissolve the Activase powder. DO NOT SHAKE. No other medication should be added to infusion solutions containing Activase. Any unused infusion solution should be discarded.

Reconstitution of 50-mg Vials

1. Withdraw 50 mL of SWFI. Diluent is included. DO NOT USE Bacteriostatic Water for Injection, USP.
2. Inject the 50 mL of SWFI into the 50-mg Activase vial, using a large bore needle (eg, 18-gauge) and a syringe, directing the stream into the lyophilized cake. DO NOT USE IF VACUUM IS NOT PRESENT. If slight foaming occurs, let the vial stand undisturbed for several minutes to allow large bubbles to dissipate.
3. Swirl gently between palms to dissolve the Activase powder. DO NOT SHAKE. No other medications should be added to infusion solutions containing Activase.

Administering the Bolus Dose of Activase (t-PA)

1. Inspect solution for particulate matter and discoloration prior to administration.
2. Withdraw 10% of the 0.9-mg/kg dose in one of the following ways:
    a. By removing the appropriate volume from the vial of reconstituted (1 mg/mL) Activase (recombinant tissue plasminogen activator known as t-PA or Alteplase) using a syringe and needle. If this method is used with the 50-mg vials, the syringe should not be primed with air and the needle should be inserted into the Activase vial stopper. If the 100-mg vial is used, the needle should be inserted away from the puncture mark made by the transfer device.
    b. By removing the appropriate volume from a port (second injection site) on the infusion line after the infusion set is primed.
    c. By programming an infusion pump to deliver the appropriate volume as a bolus at the initiation of the infusion.
3. Administer as an initial intravenous bolus over 1 minute.

Administering the Remainder of the Activase (t-PA) Dose

Infuse the remaining 90% of the 0.9-mg/kg dose over 60 minutes.

- **50-mg Vials:** Administer using either a polyvinyl chloride bag or glass vial and infusion set.
- **100-mg Vials:** Remove from the vial any quantity of drug in excess of that specified for patient treatment. Re-label the vial for reuse. Insert the spike end of an infusion set through the same puncture site created by the transfer

device in the stopper of the vial of reconstituted Activase. Hang the Activase vial from the plastic molded capping attached to the bottom of the vial.

- Make sure all of drug is used, including any drug left in the tubing.

Utah Department of Health
Promote Prevent Protect

Utah Stroke Receiving Facility Application

Hospital Name:	**Address**
Administrator	
Person Completing this Application:	**Phone Number**
	Email Address
Number of Licensed Beds	

THE RESPONSES TO THESE QUESTIONS AND ALL SUBMITTED DATA WILL BE USED FOR EXCLUSIVELY FOR STATE DESIGNATION AND PERFORMANCE IMPROVEMENT PURPOSES PLEASE RESPOND AS ACCURATELY AS POSSIBLE

If you need information about how to respond to a question,

please e-mail Robert F. Jex, rfjex@utah.gov or call 801.201.6074.

For Department Use Only

Emergency Department Staffing	**Yes**	**No**
1. Is the Emergency Department Staffed with an RN 24/7		
2. Is the Emergency Department staffed with an physician 24/7		
3. If the Emergency Department is not staffed with a physician 24/7:		
• Is there a requirement that a physician respond in 30 minutes or less?		
• Is the RN authorized to initiate stroke protocol?		
4. Is the Emergency Department staff trained in the use of a standardized assessment too for stroke severity? What assessment tool are they trained in:		
5. Does the Hospital use a standardize acute ischemic stroke protocol? ***Please include a copy of the protocol used.***		
5. **Is ACTIVASE OR rt-PA stocked in hospital?**		
7. Does the hospital staff have access to a standardized "Stroke Box"? ***Please attach a list of the contents and location***		
Transfer and Transport Protocol		
8. Does the hospital have a transport protocol with contingency plans for bad weather, no bed availability, etc? ***Please attach a copy of that protocol***		
Stroke Care and Treatment		
5. Does the hospital have telestroke capabilities with a stroke center (i.e. University of Utah)		
6. If no telestroke capabilities exists, is there a physician readily available trained to treat acute ischemic stroke?		
Name of trained physician:		
CT Availability		
5. Does the hospital have CT availability 24/7?		

• Are completed CT images able to be interpreted immediately by a radiologist, neurologist or neurosurgeon		
Laboratory Availability	**Yes**	**No**
7. Is the hospital laboratory staff 24/7?		
8. Are the following test results available within 45 minutes of patient arrival:		
• CBC		
• BMP		
• PT/PTT/INR		
Quality Improvement Plan		
11. Does the hospital collect and review standard stroke quality improvement data? ***Please attach a copy of data elements***		
12. Will the hospital collect and report quality improvement data to the DOH Stroke Program on a quarterly basis?		
13. Will the hospital participate in stroke specific training offered or approved by the Utah Department of Health?		
Attachment Checklist		
The following items should be returned as attachments to this application:		
• Stroke Physician Call Roster		
• Stroke Assessment Tool		
• Activase or r-tPA Protocol		
• Acute Ischemic Stroke Protocol		
• Stroke Box Contents and Location		
• Stroke Inter Hospital Transfer/Transport Protocol		
• Applicable Transfer Agreements		
• Stroke Quality Data Form		

If you have any questions concerning this application, please contact Robert F. Jex, RN, MHA, FACHE at rfjex@utah.gov, or 801.201.6074.

Primary Stroke Centers are highlighted in darker red.

Hospital Name	Phone Number	Address	Website
Allen Memorial Hospital	435.259.7191 435.259.5172 (f)	P.O. Box 998 719 W 400 N Moab, UT 84532	www.amhmoab.org
Alta View Hospital	801.501.2600 801.501.4327 (f)	9660 S 1300 E Sandy, UT 84094	http://intermountainhealthcare.org
American Fork Hospital	801.855.3300 801.855.3548 (f)	170 N 1100 E American Fork, UT 84003	http://intermountainhealthcare.org
Ashley Regional Medical Center	435.789.3342 435.789.1314 (f)	151 W 200 N Vernal, UT 84078	www.avmc-hospital.com
Bear River Valley Hospital	435.207.4500	905 N 1000 W Tremonton, UT 84337	http://intermountainhealthcare.org
Beaver Valley Hospital	435.438.7100 435.438.7218 (f)	P.O. Box 1670 1109 N 100 W Beaver, UT 84713	www.beaverutah.net/hospital.htm
Benchmark Behavioral Health System	801.299.5300 801.286.2163 (f)	592 W 1350 S Woods Cross, UT 84010	www.psysolutions.com/facilities/benchmark/index.html
Brigham City Community Hospital	435.734.4200 435.723.5085 (f)	950 S. Medical Dr. Brigham City, UT 84302	www.brighamcityhospital.com
Cache Valley Specialty Hospital	435.713.9700 435.713.9589 (f)	2380 N 400 E North Logan, UT 84341	www.cvsh.com
Castleview Hospital	435.637.4800 435.637.9513 (f)	300 N. Hospital Dr. Price, UT 84501	www.castleviewhospital.net
Center for Change, Inc.	801.224.8255 801.224.8301 (f)	1790 N. State St. Orem, UT 84057	www.centerforchange.com
Central Valley Medical Center	435.623.3000 435.623.3290 (f)	P.O. Box 412 48 W 1500 N Nephi, UT 84648	www.centralvalleymed.com
CHRISTUS Marian Center	801.468.6856 801.468.6850 (f)	451 Bishop Federal Ln. SLC, UT 84115	http://www.stjosephvilla.com/marian_cntr_main.htm
Copper Hills Youth Center	801.561.3377 801.569.3274 (f)	5899 W. Rivendell Dr. West Jordan, UT 84088	www.copperhills_youthcenter.com
Davis Hospital and Medical Center	801.807.1000 801.807.7045 (f)	1600 W. Antelope Dr. Layton, UT 84041	www.davishospital.com
Delta Community Medical Center	435.864.5591 435.864.4186 (f)	126 S. White Sage Ave. Delta, UT 84624	http://intermountainhealthcare.org
Dixie Regional Medical Center	435.688.4000 435.688.4002 (f)	544 S 400 E St. George, UT 84770	http://intermountainhealthcare.org
Dixie Regional Medical Center- River Road	435.251.1000 435.251.2115 (f)	1380 E. Medical Dr. St. George, UT 84790	http://intermountainhealthcare.org
Fillmore Community Medical Center	435.743.5591 435.743.6312 (f)	374 S. Highway 99 Fillmore, UT 84631	http://intermountainhealthcare.org
Garfield Memorial Hospital	435.676.8811 435.676.2679 (f)	P.O. Box 389 200 N 400 E Panguitch, UT 84759	http://intermountainhealthcare.org

Hospital Name	Phone Number	Address	Website
Gunnison Valley Hospital	435.528.7246 435.528.2197 (f)	P.O. Box 759 64 E 100 N Gunnison, UT 84634	n/a
Health South Rehab/ Specialty Hospital of Utah	801.561.3400 801.565.6576 (f)	8074 S 1300 E Sandy, UT 84094	www.healthsouth.com
Heber Valley Medical Center	435.654.2500 435.654.2576 (f)	1485 S. Highway 40 Heber City, UT 84032	http://intermountainhealthcare.org
Highland Ridge Hospital	801.569.2153 801.537.9006 (f)	7309 S 180 W Midvale, UT 84047	www.highlandridgehospital.com
Huntsman Cancer Institute	801.587.7000 801.587.4030 (f)	1950 Circle of Hope Dr. SLC, UT 84112	http://huntsmancancer.org
Intermountain Medical Center	801.507.7000	5121 S. Cottonwood St. Murray, UT 84107	http://intermountainhealthcare.org
Jordan Valley Medical Center	801.561.8888 801.569.8723 (f)	3580 W 9000 S West Jordan, UT 84088	www.jordanvalleyhospital.com
Kane County Hospital	435.644.5811 435.644.4141 (f)	355 N. Main St. Kanab, UT 84741	n/a
Lakeview Hospital	801.299.2200 801.299.2511 (f)	630 E. Medical Dr. Bountiful, UT 84010	www.lakeviewhospital.com
LDS Hospital	801.408.1100 801.408.1665 (f)	8th Ave & "C" Street SLC, UT 84143	http://intermountainhealthcare.org
Logan Regional Hospital	435.716.1000 435.716.5409 (f)	1400 N 500 E Logan, UT 84341	http://intermountainhealthcare.org
Mc-Kay Dee Hospital Center	801.627.2800 801.387.3725 (f)	4401 Harrison Blvd. Ogden, UT 84403	http://intermountainhealthcare.org
Milford Valley Memorial Hospital	435.387.2411 435.387.5011 (f)	P.O. Box 640 451 N. Main St. Milford, UT 84751	n/a
Mountain View Hospital	801.465.7000 801.465.7170 (f)	1000 E 100 N Payson, UT 84651	www.mvhpayson.com
Mountain West Medical Center	435.843.3600 435.882.8770 (f)	2055 N. Main St. Tooele, UT 84074	www.mountainwestmc.com
Ogden Regional Medical Center	801.479.2111 801.479.2091 (f)	5475 S 500 E Ogden, UT 84405	www.ogdenregional.com
Orem Community Hospital	801.224.4080 801.226.7831 (f)	331 N 400 W Orem, UT 84057	http://intermountainhealthcare.org
Park City Medical Center	435.658.7000	900 Round Valley Dr. Park City, UT 84060	http://intermountainhealthcare.org
Pioneer Valley Hospital	801.964.3100 801.964.3247 (f)	3460 S. Pioneer Pkwy. West Valley City, UT 84120	www.pioneervalleyhospital.com
Primary Children's Medical Center	801.588.2000 801.588.2318 (f)	100 N. Medical Dr. SLC, UT 84113	http://intermountainhealthcare.org
Promise Specialty Hospital of SL	801.350.4110	1050 E. South Temple SLC, UT 84102	www.promisehealthcare.com/regional_map.asp?state=utah

Hospital Name	Phone Number	Address	Website
San Juan Hospital/ Health Services	435.587.2116 435.587.2061 (f)	P.O. Box 308 364 W 100 N Monticello, UT 84535	n/a
Sanpete Valley Hospital	435.462.2441 435.462.2609 (f)	1100 S. Medical Dr. Mt. Pleasant, UT 84647	http://intermountainhealthcare.org
Sevier Valley Medical Center	435.896.8271 435.896.9449 (f)	1000 N. Main St. Richfield, UT 84701	http://intermountainhealthcare.org
Shriners Hospital for Children, Intermountain	801.536.3500 801.536.3799 (f)	Fairfax Rd. at Virginia St. SLC, UT 84103	http://www.shrinersh.org/Hospitals/Salt_Lake_City/
South Davis Community Hospital	801.295.2361	401 S 400 E Bountiful, UT 84010	www.sdch.com
St. Mark's Hospital	801.268.7111 801.270.3489 (f)	1200 E 3900 S SLC, UT 84124	www.stmarkshospital.com
The Orthopedic Specialty Hospital	801.314.4100	5848 S 300 E Murray, UT 84107	http://intermountainhealthcare.org
Timpanogos Regional Hospital	801.714.6570 801.714.6597 (f)	750 W 800 N Orem, UT 84057	www.timpanogosregionalhospital.com
Uintah Basin Medical Center	435.722.4691 435.722.9291 (f)	250 W 300 N Roosevelt, UT 84066	www.ubmc.org
University of Utah Medical Center	801.581.2121 801.585.5280 (f)	50 N. Medical Dr. SLC, UT 84132	http://uuhsc.utah.edu
University Neuropsychiatric Institute	801.583.2500 801.582.8471 (f)	501 Chipeta Way SLC, UT 84108	http://uuhsc.utah.edu/uni
Utah State Hospital	801.344.4400 801.344.4225 (f)	P. O. Box 270 1300 E. Center St. Provo, UT 84603	www.hsush.state.ut.us
Utah Valley Regional Medical Center	801.357.7850 801.357.7780 (f)	1034 N 500 W Provo, UT 84604	http://intermountainhealthcare.org
Utah Valley Specialty Hospital	801.226.8880 801.226.5755 (f)	306 W. River Bend Ln. Provo, UT 84604	http://uvsh.ernesthealth.com
VA SLC Health Care System	801.582.1565 801.584.1289 (f)	500 Foothill Blvd. SLC, UT 84148	www.va.gov/visn19/slc.htm
Valley View Medical Center	435.868.5000 435.868.5803 (f)	1303 N. Main St. Cedar City, UT 84720	http://intermountainhealthcare.org

References

Appendix F

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UT Department of Health Logo on back cover.