In-Patient Stroke Care

Sharp HealthCare

Physician and Provider Review 2021

Learning Objectives

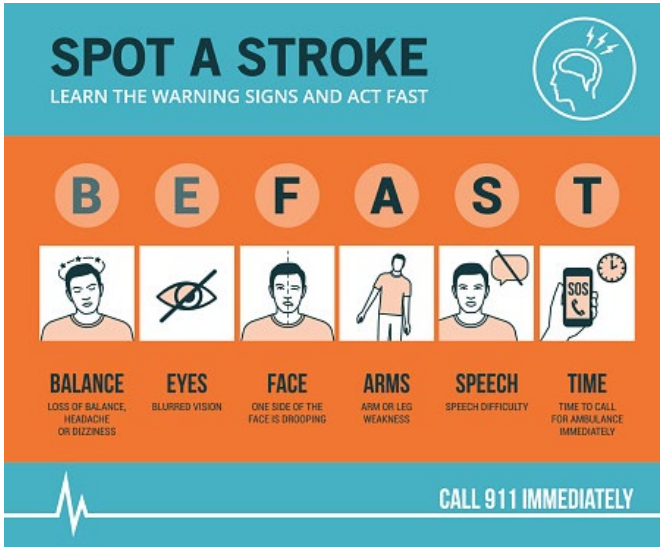
- Verbalize the importance of management of the in-patient stroke patient in relation to Joint Commission and research.
- Identify prognosis of in-hospital stroke in morbidity and mortality.
- Verbalize time parameters for stroke care (stroke sx recognition to CT, stroke sx recognition to tPA etc).
- Recognize new symptoms and worsening sx for reasons to call an in house stroke code.
- Specify the stroke order sets required by Joint Commission for management of the in patient stroke.
- Be knowledgeable of the requirements and core measures to be met at discharge.
- Implement High Intensity Statin therapy at discharge, document thoroughly any contraindications as listed.

In-Patient Care of the Stroke Patient

Management of the stroke patient in hospital is a complex and highly intricate balance of care that demands physician and nurse attention to a variety of variables that can impact outcomes.

- At Sharp HealthCare, every effort has been made to meet all Joint Commission Requirements through carefully written order sets and algorithms based on the American Heart Association and American Stroke Association Clinical Practice Guidelines. This improves patient outcomes, and ensures support of nurses and physicians who care for them.
- Research has shown that organized care provided to the stroke patient gives the patient a higher chance of survival, decreased deficits, can return home and regain independence. By using the orders sets and algorithms available, and ***meeting the performance measures***, Sharp HealthCare ensures the highest level of care for stroke patients.

Morbidity and Mortality



<u>Prognosis is worse for in-hospital strokes</u>

- Stroke severity higher
- Longer hospital stays
- Functional outcome worse
- Less likely to return “home”
- Mortality higher
- In-hospital mortality 15-19%
- Community stroke 2-7%
- Death more often due to co-morbidities and complications
- Higher complication rates (DVT, Pneumonia)
- Infection
- Respiratory

In-Patient Stroke Code

Between 4 and 17% of all ischemic stroke have symptom onset during hospitalization with 35,000 to 75,000 stroke occurring annually in the hospital. (AHA 2015)

Large proportion of in-hospital strokes occur in patients with pre-existing cardiac conditions or recent cardiac surgery:

- Atrial fibrillation
- Acute Myocardial Infarction
- Bacterial endocarditis
- Cardiac thrombus
- Coronary Artery Bypass Graft
- Implantation/removal of pacemaker
- Aortic repair

Pre-disposing factors:

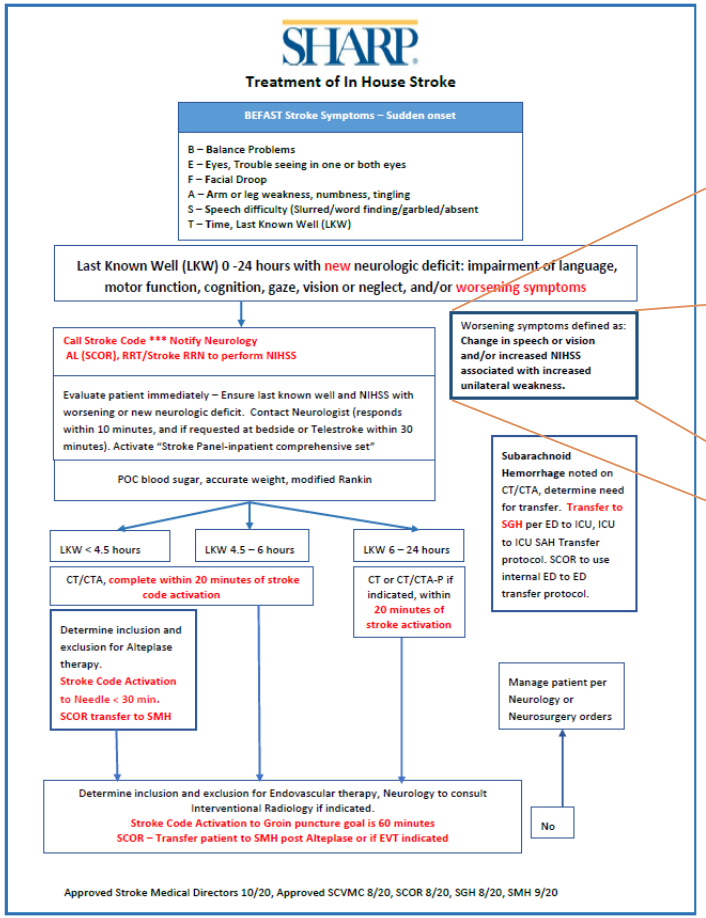
- Pro-thrombotic states
- Interruption of antithrombotic therapy
- Hypotension
- Post TIA
- Paradoxical embolism
- Plaque disruption from vascular manipulation

In-patient STROKE CODES have the same work up and time parameters as an ED stroke code

- Stroke Recognition to physician arrival ≤10 minutes
- Neurology assessment in person or by Telestroke in 30 minutes
- Stroke Recognition to CT initiation ≤ 20 minutes
- Stroke Recognition to Alteplase administration ≤ 30 minutes
- Stroke Recognition to groin puncture for endovascular care ≤ 60 minutes
- Stroke Recognition to recanalization of large vessel occlusion ≤ 90 minutes

In-Patient Stroke Code Algorithm

Note:
Once BEFAST, Neurologic deficit or worsening symptoms met, STROKE CODE called FIRST



Update:

Worsening symptoms defined as: change in speech or vision and/or increased NIHSS associated with increased unilateral weakness.

Inpatient order sets, required to be used by Joint Commission. They contain most of the Clinical Performance Measures required:

Admission order sets:

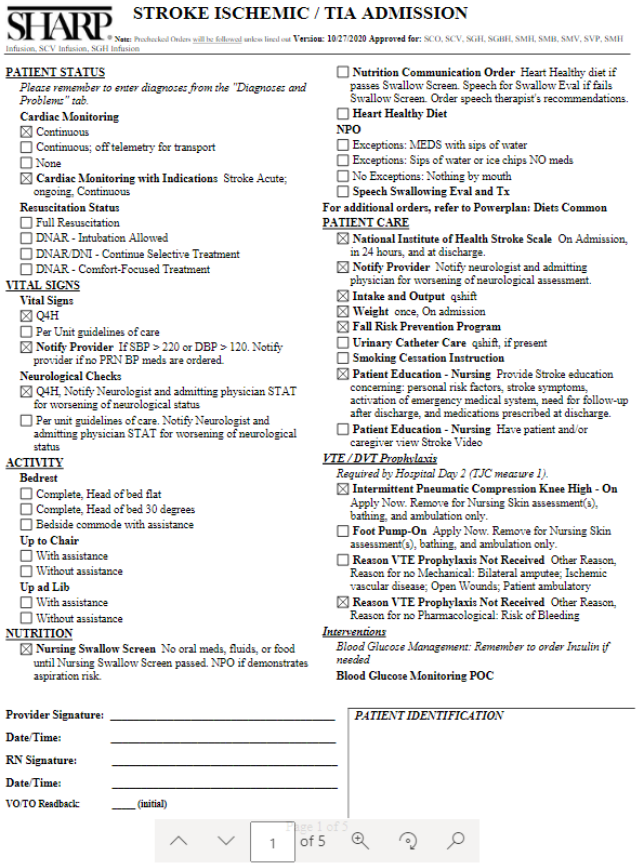
- Stroke Ischemic/TIA admission set
- Intracranial Hemorrhage admission set (ICU and PCU)
- Subarachnoid Hemorrhage admission set (ICU and PCU)

Interventions:

- IR Post Intra-Arterial Thrombolysis Mechanic Thrombectomy for Ischemic Stroke, admission to ICU
- Post Alteplase order set (ICU)

Required by Joint Commission

Ischemic Stroke/TIA admission



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STROKE ISCHEMIC / TIA ADMISSION

Note: Preselected Orders will be followed unless lined out **Version: 10/27/2020 Approved for:** SCO, SCV, SGH, SGBH, SMH, SMB, SMV, SVP, SMH Infusion, SCV Infusion, SGH Infusion

PATIENT STATUS

Please remember to enter diagnoses from the "Diagnoses and Problems" tab.

Cardiac Monitoring

- ☒ Continuous
- ☐ Continuous; off telemetry for transport
- ☐ None
- ☒ **Cardiac Monitoring with Indications** Stroke Acute; ongoing, Continuous

Resuscitation Status

- ☐ Full Resuscitation
- ☐ DNAR - Intubation Allowed
- ☐ DNAR/DNI - Continue Selective Treatment
- ☐ DNAR - Comfort-Focused Treatment

VITAL SIGNS

Vital Signs

- ☒ Q4H
- ☐ Per Unit guidelines of care
- ☒ **Notify Provider** If SBP > 220 or DBP > 120. Notify provider if no PRN BP meds are ordered.

Neurological Checks

- ☒ Q4H, Notify Neurologist and admitting physician STAT for worsening of neurological status
- ☐ Per unit guidelines of care. Notify Neurologist and admitting physician STAT for worsening of neurological status

ACTIVITY

Bedrest

- ☐ Complete, Head of bed flat
- ☐ Complete, Head of bed 30 degrees
- ☐ Bedside commode with assistance

Up to Chair

- ☐ With assistance
- ☐ Without assistance

Up ad Lib

- ☐ With assistance
- ☐ Without assistance

NUTRITION

- ☒ **Nursing Swallow Screen** No oral meds, fluids, or food until Nursing Swallow Screen passed. NPO if demonstrates aspiration risk.
- ☐ **Nutrition Communication Order** Heart Healthy diet if passes Swallow Screen. Speech for Swallow Eval if fails Swallow Screen. Order speech therapist's recommendations.
- ☐ **Heart Healthy Diet**

NPO

- ☐ Exceptions: MEDS with sips of water
- ☐ Exceptions: Sips of water or ice chips NO meds
- ☐ No Exceptions: Nothing by mouth
- ☐ **Speech Swallowing Eval and Tx**

For additional orders, refer to Powerplan: Diets Common

PATIENT CARE

- ☒ **National Institute of Health Stroke Scale** On Admission, in 24 hours, and at discharge.
- ☒ **Notify Provider** Notify neurologist and admitting physician for worsening of neurological assessment.
- ☒ **Intake and Output** qshift
- ☒ **Weight** once, On admission
- ☒ **Fall Risk Prevention Program**
- ☐ **Urinary Catheter Care** qshift, if present
- ☐ **Smoking Cessation Instruction**
- ☒ **Patient Education - Nursing** Provide Stroke education concerning: personal risk factors, stroke symptoms, activation of emergency medical system, need for follow-up after discharge, and medications prescribed at discharge.
- ☐ **Patient Education - Nursing** Have patient and/or caregiver view Stroke Video

VTE / DVT Prophylaxis

Required by Hospital Day 2 (TJC measure 1).

- ☒ **Intermittent Pneumatic Compression Knee High - On** Apply Now. Remove for Nursing Skin assessment(s), bathing, and ambulation only.
- ☐ **Foot Pump-On** Apply Now. Remove for Nursing Skin assessment(s), bathing, and ambulation only.
- ☐ **Reason VTE Prophylaxis Not Received** Other Reason, Reason for no Mechanical: Bilateral amputee; Ischemic vascular disease; Open Wounds; Patient ambulatory
- ☒ **Reason VTE Prophylaxis Not Received** Other Reason, Reason for no Pharmacological: Risk of Bleeding

Interventions

Blood Glucose Management: Remember to order Insulin if needed

Blood Glucose Monitoring POC

Provider Signature: _____

Date/Time: _____

RN Signature: _____

Date/Time: _____

VO/TO Readback: ____ (initial)

PATIENT IDENTIFICATION

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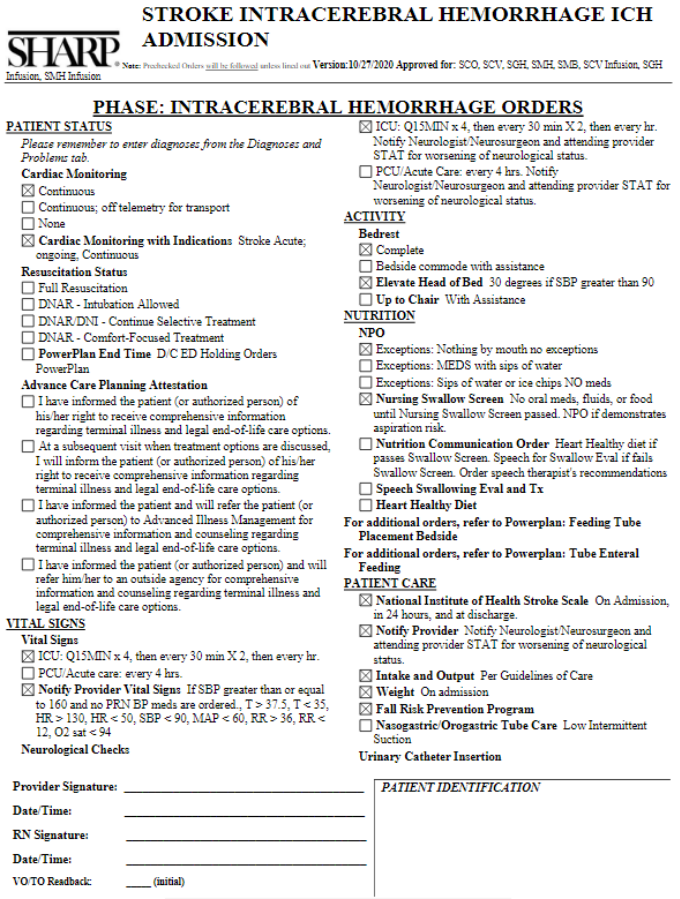
Required by Joint Commission

Stroke Intracerebral Hemorrhage ICH admission

Remember to document the ICH score in consultation note.



STROKE INTRACEREBRAL HEMORRHAGE ICH ADMISSION

SHARP® Note: Prechecked Orders will be followed unless lined out **Version:10/27/2020 Approved for:** SCO, SCV, SGH, SMH, SMB, SCV Infusion, SGH Infusion, SMH Infusion

PHASE: INTRACEREBRAL HEMORRHAGE ORDERS

PATIENT STATUS

Please remember to enter diagnoses from the Diagnoses and Problems tab.

Cardiac Monitoring

- ☒ Continuous
- ☐ Continuous; off telemetry for transport
- ☐ None
- ☒ **Cardiac Monitoring with Indications** Stroke Acute; ongoing, Continuous

Resuscitation Status

- ☐ Full Resuscitation
- ☐ DNAR - Intubation Allowed
- ☐ DNAR/DNI - Continue Selective Treatment
- ☐ DNAR - Comfort-Focused Treatment
- ☐ **PowerPlan End Time** D/C ED Holding Orders PowerPlan

Advance Care Planning Attestation

- ☐ I have informed the patient (or authorized person) of his/her right to receive comprehensive information regarding terminal illness and legal end-of-life care options.
- ☐ At a subsequent visit when treatment options are discussed, I will inform the patient (or authorized person) of his/her right to receive comprehensive information regarding terminal illness and legal end-of-life care options.
- ☐ I have informed the patient and will refer the patient (or authorized person) to Advanced Illness Management for comprehensive information and counseling regarding terminal illness and legal end-of-life care options.
- ☐ I have informed the patient (or authorized person) and will refer him/her to an outside agency for comprehensive information and counseling regarding terminal illness and legal end-of-life care options.

VITAL SIGNS

Vital Signs

- ☒ ICU: Q15MIN x 4, then every 30 min X 2, then every hr.
- ☐ PCU/Acute care: every 4 hrs.
- ☒ **Notify Provider Vital Signs** If SBP greater than or equal to 160 and no PRN BP meds are ordered., T > 37.5, T < 35, HR > 130, HR < 50, SBP < 90, MAP < 60, RR > 36, RR < 12, O2 sat < 94

Neurological Checks

- ☒ ICU: Q15MIN x 4, then every 30 min X 2, then every hr. Notify Neurologist/Neurosurgeon and attending provider STAT for worsening of neurological status.
- ☐ PCU/Acute Care: every 4 hrs. Notify Neurologist/Neurosurgeon and attending provider STAT for worsening of neurological status.

ACTIVITY

Bedrest

- ☒ Complete
- ☐ Bedside commode with assistance
- ☒ **Elevate Head of Bed** 30 degrees if SBP greater than 90
- ☐ **Up to Chair** With Assistance

NUTRITION

NPO

- ☒ Exceptions: Nothing by mouth no exceptions
- ☐ Exceptions: MEDS with sips of water
- ☐ Exceptions: Sips of water or ice chips NO meds
- ☒ **Nursing Swallow Screen** No oral meds, fluids, or food until Nursing Swallow Screen passed. NPO if demonstrates aspiration risk.
- ☐ **Nutrition Communication Order** Heart Healthy diet if passes Swallow Screen. Speech for Swallow Eval if fails Swallow Screen. Order speech therapist's recommendations
- ☐ **Speech Swallowing Eval and Tx**
- ☐ **Heart Healthy Diet**

For additional orders, refer to Powerplan: Feeding Tube Placement Bedside

For additional orders, refer to Powerplan: Tube Enteral Feeding

PATIENT CARE

- ☒ **National Institute of Health Stroke Scale** On Admission, in 24 hours, and at discharge.
- ☒ **Notify Provider** Notify Neurologist/Neurosurgeon and attending provider STAT for worsening of neurological status.
- ☒ **Intake and Output** Per Guidelines of Care
- ☒ **Weight** On admission
- ☒ **Fall Risk Prevention Program**
- ☐ **Nasogastric/Orogastric Tube Care** Low Intermittent Suction

Urinary Catheter Insertion

Provider Signature: _____

Date/Time: _____

RN Signature: _____

Date/Time: _____

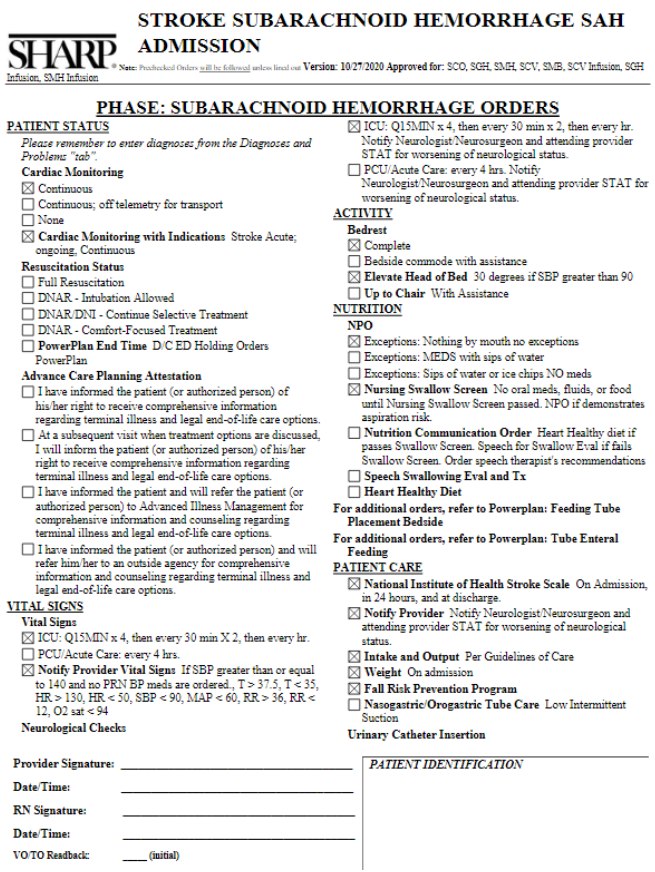
VO/TO Readback: ____ **(initial)**

PATIENT IDENTIFICATION

Required by Joint Commission

Stroke Subarachnoid Hemorrhage SAH Admission

Remember to document the Hunt and Hess score in consultation note.



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STROKE SUBARACHNOID HEMORRHAGE SAH ADMISSION

* Note: Prechecked Orders will be followed unless lined out **Version: 10/27/2020 Approved for:** SCO, SGH, SMH, SCV, SMB, SCV Infusion, SGH Infusion, SMH Infusion

PHASE: SUBARACHNOID HEMORRHAGE ORDERS

PATIENT STATUS

Please remember to enter diagnoses from the Diagnoses and Problems "tab".

Cardiac Monitoring

- ☒ Continuous
- ☐ Continuous; off telemetry for transport
- ☐ None
- ☒ **Cardiac Monitoring with Indications** Stroke Acute; ongoing, Continuous

Resuscitation Status

- ☐ Full Resuscitation
- ☐ DNAR - Intubation Allowed
- ☐ DNAR/DNI - Continue Selective Treatment
- ☐ DNAR - Comfort-Focused Treatment
- ☐ **PowerPlan End Time** D/C ED Holding Orders PowerPlan

Advance Care Planning Attestation

- ☐ I have informed the patient (or authorized person) of his/her right to receive comprehensive information regarding terminal illness and legal end-of-life care options.
- ☐ At a subsequent visit when treatment options are discussed, I will inform the patient (or authorized person) of his/her right to receive comprehensive information regarding terminal illness and legal end-of-life care options.
- ☐ I have informed the patient and will refer the patient (or authorized person) to Advanced Illness Management for comprehensive information and counseling regarding terminal illness and legal end-of-life care options.
- ☐ I have informed the patient (or authorized person) and will refer him/her to an outside agency for comprehensive information and counseling regarding terminal illness and legal end-of-life care options.

VITAL SIGNS

Vital Signs

- ☒ ICU: Q15MIN x 4, then every 30 min X 2, then every hr.
- ☐ PCU/Acute Care: every 4 hrs.
- ☒ **Notify Provider Vital Signs** If SBP greater than or equal to 140 and no PRN BP meds are ordered., T > 37.5, T < 35, HR > 130, HR < 50, SBP < 90, MAP < 60, RR > 36, RR < 12, O2 sat < 94

Neurological Checks

- ☒ ICU: Q15MIN x 4, then every 30 min x 2, then every hr. Notify Neurologist/Neurosurgeon and attending provider STAT for worsening of neurological status.
- ☐ PCU/Acute Care: every 4 hrs. Notify Neurologist/Neurosurgeon and attending provider STAT for worsening of neurological status.

ACTIVITY

Bedrest

- ☒ Complete
- ☐ Bedside commode with assistance
- ☒ **Elevate Head of Bed** 30 degrees if SBP greater than 90
- ☐ **Up to Chair** With Assistance

NUTRITION

NPO

- ☒ Exceptions: Nothing by mouth no exceptions
- ☐ Exceptions: MEDS with sips of water
- ☐ Exceptions: Sips of water or ice chips NO meds
- ☒ **Nursing Swallow Screen** No oral meds, fluids, or food until Nursing Swallow Screen passed. NPO if demonstrates aspiration risk.
- ☐ **Nutrition Communication Order** Heart Healthy diet if passes Swallow Screen. Speech for Swallow Eval if fails Swallow Screen. Order speech therapist's recommendations
- ☐ **Speech Swallowing Eval and Tx**
- ☐ **Heart Healthy Diet**

For additional orders, refer to Powerplan: Feeding Tube Placement Bedside

For additional orders, refer to Powerplan: Tube Enteral Feeding

PATIENT CARE

- ☒ **National Institute of Health Stroke Scale** On Admission, in 24 hours, and at discharge.
- ☒ **Notify Provider** Notify Neurologist/Neurosurgeon and attending provider STAT for worsening of neurological status.
- ☒ **Intake and Output** Per Guidelines of Care
- ☒ **Weight** On admission
- ☒ **Fall Risk Prevention Program**
- ☐ **Nasogastric/Orogastric Tube Care** Low Intermittent Suction

Urinary Catheter Insertion

Provider Signature: _____

Date/Time: _____

RN Signature: _____

Date/Time: _____

VO/TO Readback: ____ **(initial)**

PATIENT IDENTIFICATION

SHARP

Required by Joint Commission

IR Post Intra-Arterial Thrombolysis
Mechanic Thrombectomy for Ischemic Stroke

Note specific BP parameters per NIR or Neurology

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IR Post Intra-Arterial Thrombolysis - Mech Thrombectomy for Ischemic Stroke

Note: Prechecked Orders will be followed unless lined out Version: (07/22/2020) Approved for: All Sharp Hospitals

PATIENT STATUS

- ☒ **Cardiac Monitoring** Continuous
- ☒ **Cardiac Monitoring with Indications** Stroke Acute; ongoing, Continuous

VITAL SIGNS

Blood Pressure

- ☐ Keep SBP within 100-139mmHg
- ☐ Keep SBP within 140-180mmHg
- ☐ Keep SBP within __-__mmHg
- ☒ **Vital Signs** Every 15 minutes x 2 hours, then every 30 minutes x 6 hours, then every 1 hour x 16 hours then per unit guidelines of care.
- ☒ **Neurological Checks** Every 15 minutes x 2 hours, then every 30 minutes x 6 hours, then every 1 hour x 16 hours, then per unit guidelines of care. Notify Neurologist and admitting practitioner STAT for worsening of neurological status.
- ☒ **Notify Provider Vital Signs** If SBP>180 or DBP >105 (Confirm with 2 manual readings 10 minutes apart). Notify provider if no PRN BP meds are ordered.

Neurovascular Check

- ☒ Peripheral Pulses in accessed extremity/extremities every 15 minutes X 4, then every 30 minutes X 2, then every 1 hour X 4, then routine.
- ☐ Peripheral Pulses in accessed extremity/extremities every 15 minutes X 4, then every 30 minutes X 2, then every 1 hour X 4, then every 2 hours.

Groin/Puncture Site Checks

- ☒ Every 15 minutes X 4, then every 30 minutes X 2, then every 1 hour X 4, then routine.
- ☐ Every 15 minutes X 4, then every 30 minutes X 2, then every 1 hour X 4, then every 2 hours

ACTIVITY

Bedrest

- ☒ continuous
- ☐ for 6 hr, then Bathroom privileges with assistance.
- ☐ for 3 hr, then Bathroom privileges with assistance.
- ☒ **Elevate Head of Bed** No more than 30 degrees, 2 hours post sheath removal, while on bedrest.

Position

- ☐ Remind patient to keep right leg and hip straight.
- ☐ Remind patient to keep left leg and hip straight.
- ☐ Remind patient to keep both legs and hips straight.
- ☒ **Turn Patient** May turn to sides if patient keeps accessed extremity straight

NUTRITION

NPO

- ☐ Exceptions: Meds with Sip of Water
- ☐ Exceptions: Sips of water or ice chips NO meds
- ☐ No Exceptions: Nothing by mouth
- ☐ Complete

PATIENT CARE

- ☒ **National Institute of Health Stroke Scale** On admission to ICU and repeat in 24 hours
- ☒ **Nursing Swallow Screen** No oral meds, fluids, or food until Nursing Swallow Screen passed. NPO if demonstrates aspiration risk. Speech for Swallow Eval if fails Swallow Screen.
- ☒ **Notify Provider** If bleeding or hematoma develops at puncture site, apply manual pressure and notify IR MD
- ☒ **Notify Provider** If any changes in pulses, notify IR MD
- ☒ **Dressing change** Remove dressing in 24 hours and apply bandaid.

Arterial Sheath/Catheter Management

Order Heparinized Saline if Needed To Keep Open The Arterial Sheath and/or Catheter.

- ☐ **heparinized saline [Pharmacy Order Priority: Routine]** intraARTERIAL, 10 mL/hr, Start date = T;N, Use to keep arterial infusion sheath/catheter patent
- ☐ **heparinized saline [Pharmacy Order Priority: Routine]** intraARTERIAL, 3 mL/hr, Start date = T;N, via pressurized bag at 300mmHg. Use to keep arterial infusion sheath/catheter patent.
- ☐ **Discontinue Arterial Line**
- ☐ **Arterial Sheath/Catheter Management Instructions** Do not pull sheath/catheter.

IV SOLUTIONS

NaCl 0.9%

- ☐ IV, 1 mL/kg/hr
  Max rate 100 mL/hr
- ☐ IV, 30 mL/hr, Keep vein open.

MEDICATIONS

- ☒ **Medication Instructions** No anticoagulants or antiplatelets for 24 hours after tPA.

Antihypertensives

SBP within 100-139mmHg

- ☐ **niCARdipine (CardENE) drip [Pharmacy Order Priority: Routine] [Normalized Rate: 5 mg/hr]** IV, Starting rate 5 mg/hr. Titrate no faster than 2.5 mg/hr every 15 min to goal., Max Dose = 15 mg/hr, Indication: Keep SBP within 100-139mmHg
  Taper no faster than 2.5 mg/hr every 30 min to goal.
  May titrate outside of these parameters to maximum ordered dose for an unstable patient.

PATIENT IDENTIFICATION

(Orders continued on next page)

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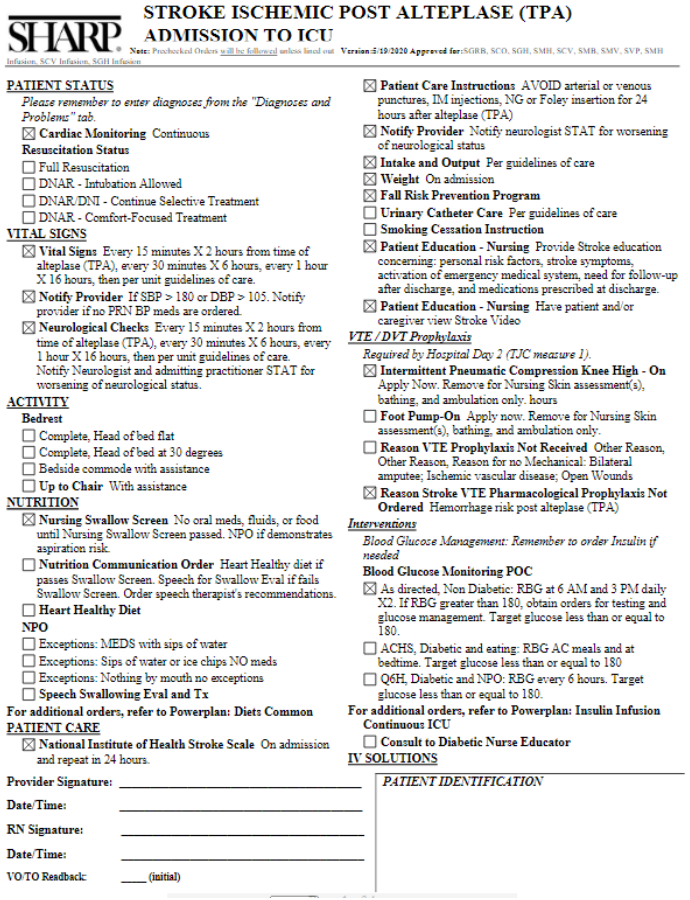
Required by Joint Commission

Stroke Ischemic post Alteplase admission to ICU



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STROKE ISCHEMIC POST ALTEPLASE (TPA) ADMISSION TO ICU

Note: Prechecked Orders will be followed unless lined out Version:5/19/2020 Approved for:SGRB, SCO, SGH, SMH, SCV, SMB, SMV, SVP, SMH Infusion, SCV Infusion, SGH Infusion

PATIENT STATUS

Please remember to enter diagnoses from the "Diagnoses and Problems" tab.

☒ **Cardiac Monitoring** Continuous

Resuscitation Status

☐ Full Resuscitation
☐ DNAR - Intubation Allowed
☐ DNAR/DNI - Continue Selective Treatment
☐ DNAR - Comfort-Focused Treatment

VITAL SIGNS

☒ **Vital Signs** Every 15 minutes X 2 hours from time of alteplase (TPA), every 30 minutes X 6 hours, every 1 hour X 16 hours, then per unit guidelines of care.

☒ **Notify Provider** If SBP > 180 or DBP > 105. Notify provider if no PRN BP meds are ordered.

☒ **Neurological Checks** Every 15 minutes X 2 hours from time of alteplase (TPA), every 30 minutes X 6 hours, every 1 hour X 16 hours, then per unit guidelines of care. Notify Neurologist and admitting practitioner STAT for worsening of neurological status.

ACTIVITY

Bedrest

☐ Complete, Head of bed flat
☐ Complete, Head of bed at 30 degrees
☐ Bedside commode with assistance
☐ **Up to Chair** With assistance

NUTRITION

☒ **Nursing Swallow Screen** No oral meds, fluids, or food until Nursing Swallow Screen passed. NPO if demonstrates aspiration risk.

☐ **Nutrition Communication Order** Heart Healthy diet if passes Swallow Screen. Speech for Swallow Eval if fails Swallow Screen. Order speech therapist's recommendations.

☐ **Heart Healthy Diet**

NPO

☐ Exceptions: MEDS with sips of water
☐ Exceptions: Sips of water or ice chips NO meds
☐ Exceptions: Nothing by mouth no exceptions
☐ **Speech Swallowing Eval and Tx**

For additional orders, refer to Powerplan: Diets Common

PATIENT CARE

☒ **National Institute of Health Stroke Scale** On admission and repeat in 24 hours.

☒ **Patient Care Instructions** AVOID arterial or venous punctures, IM injections, NG or Foley insertion for 24 hours after alteplase (TPA)

☒ **Notify Provider** Notify neurologist STAT for worsening of neurological status

☒ **Intake and Output** Per guidelines of care

☒ **Weight** On admission

☒ **Fall Risk Prevention Program**

☐ **Urinary Catheter Care** Per guidelines of care

☐ **Smoking Cessation Instruction**

☒ **Patient Education - Nursing** Provide Stroke education concerning: personal risk factors, stroke symptoms, activation of emergency medical system, need for follow-up after discharge, and medications prescribed at discharge.

☒ **Patient Education - Nursing** Have patient and/or caregiver view Stroke Video

VTE / DVT Prophylaxis

Required by Hospital Day 2 (TJC measure 1).

☒ **Intermittent Pneumatic Compression Knee High - On** Apply Now. Remove for Nursing Skin assessment(s), bathing, and ambulation only. hours

☐ **Foot Pump-On** Apply now. Remove for Nursing Skin assessment(s), bathing, and ambulation only.

☐ **Reason VTE Prophylaxis Not Received** Other Reason, Other Reason, Reason for no Mechanical: Bilateral amputee; Ischemic vascular disease; Open Wounds

☒ **Reason Stroke VTE Pharmacological Prophylaxis Not Ordered** Hemorrhage risk post alteplase (TPA)

Interventions

Blood Glucose Management: Remember to order Insulin if needed

Blood Glucose Monitoring POC

☒ As directed, Non Diabetic: RBG at 6 AM and 3 PM daily X2. If RBG greater than 180, obtain orders for testing and glucose management. Target glucose less than or equal to 180.

☐ ACHS, Diabetic and eating: RBG AC meals and at bedtime. Target glucose less than or equal to 180

☐ Q6H, Diabetic and NPO: RBG every 6 hours. Target glucose less than or equal to 180.

For additional orders, refer to Powerplan: Insulin Infusion Continuous ICU

☐ **Consult to Diabetic Nurse Educator**

IV SOLUTIONS

Provider Signature: _____

Date/Time: _____

RN Signature: _____

Date/Time: _____

VO/TO Readback: ____ (initial)

PATIENT IDENTIFICATION

SHARP

Order sets for emergency situations in ICU:

Angioedema post Alteplase

ANGIOEDEMA POST ALTEPLASE

Note: Prechecked Orders will be followed unless lined out Version: 11/24/2020 Approved for: SCO, SGH, SMH, SCV

PATIENT STATUS

- ☒ **Cardiac Monitoring** Continuous
- ☒ **Cardiac Monitoring with Indications** Stroke Acute; ongoing, Continuous

VITAL SIGNS

- ☒ **Vital Signs** Q15MIN, until order is changed by provider
- ☒ **Neurological Checks** Q15MIN, until order is changed by provider

PATIENT CARE

If patient develops edema of the tongue, lips, mouth or oropharynx, DISCONTINUE IV Alteplase infusion and HOLD ACE-I's immediately

- ☒ **Misc Nursing Task** Discontinue IV Alteplase, ACE inhibitor. Manage airway; keep intubation kit at bedside if patient develops edema of the tongue, lips, mouth or oropharynx
- ☒ **Notify Provider** Notify neurologist and admitting providers STAT for worsening of angioedema symptoms

MEDICATIONS

- ☒ **methylPREDNISolone (SOLUMedrol) [Pharmacy Order Priority: STAT]** 125 mg, IV push, once, for edema of the tongue, lips, mouth or oropharynx, supplied as vial
- ☒ **diphenhydrAMINE (Benadryl) [Pharmacy Order Priority: STAT]** 50 mg, IV push, once, for edema of the tongue, lips, mouth or oropharynx, supplied as vial
- ☒ **famotidine (Pepcid) [Pharmacy Order Priority: STAT]** 20 mg, IV push, once, for edema of the tongue, lips, mouth or oropharynx, supplied as vial

If there is further increase in angioedema after these measures OR if stridor or eminent respiratory compromise develops, administer:

- ☐ **EPINEPHrine [Pharmacy Order Priority: STAT]** 0.3 mg, intraMUSCULAR, once, for edema of the tongue, lips, mouth or oropharynx and/or stridor, supplied as amp
  To be used for increases in angioedema after initial medications administered OR if stridor or eminent respiratory compromise develops
- ☐ **racEPINEPHrine [Pharmacy Order Priority: STAT]** 0.5 mL, inhalation, once, for edema of the tongue, lips, mouth or oropharynx and/or stridor, supplied as inh soln
  To be used for increases in angioedema after initial medications administered OR if stridor or eminent respiratory compromise develops

Consider for patients receiving ACE inhibitors and are refractory to previous treatment measures:

- ☐ **Berinert [Pharmacy Order Priority: STAT]** 20 unit/kg, IV push, once, maximum IV rate 4 mL/min; use dedicated line - not compatible with any other medications or solutions, supplied as syringe compounded
  For patient receiving ACE inhibitor and are refractory to previous treatment measures

Hemorrhage due to Alteplase

HEMORRHAGE IN ACUTE ISCHEMIC STROKE POST ALTEPLASE ADMINISTRATION

Note: Prechecked Orders will be followed unless lined out Version: 07/22/2020 Approved for: SMH, SGH, SCV, SCO

PATIENT STATUS

If patient develops acute non-traumatic intracranial hemorrhage or subarachnoid hemorrhage (ICH or SAH)

Use Stroke Intracerebral Hemorrhage ICH Admission PowerPlan or Stroke Subarachnoid Hemorrhage SAH Admission PowerPlan

- ☒ **Misc Nursing Task** Discontinue, thrombolytic infusion if hemorrhage suspected during administration of thrombolytic.
- ☒ **Notify Provider** Notify Attending
- ☐ **Notify Provider** Notify Neurosurgery for consult
- ☒ **Blood Transfusion Instructions** CALL BLOOD BANK and notify of the possibility for cryoprecipitate

PATIENT CARE

- ☒ **Cardiac Monitoring** Continuous
- ☒ **Cardiac Monitoring with Indications** Stroke Acute; ongoing, Continuous
- ☒ **Vital Signs** T;N, Q15MIN, Maintain BP LESS than 160/100 or per MD order
  Until further orders received.
- ☒ **Neurological Checks** T;N, Q15MIN
  Until further orders received.
- ☒ **National Institute of Health Stroke Scale** Documented with change in neuro status
- ☐ **ICP Monitoring** Monitor ICP per unit protocol
- ☐ **Vital Signs** Monitor CPP per unit protocol
- ☐ **Vital Signs** Monitor MAP per unit protocol

IV SOLUTIONS

IV Infusion

- ☐ **Sodium Chloride 0.9%** IV, 100, mL/hr

IV Bolus

- ☐ **Sodium Chloride 0.9% Bolus** 250 mL, IV Bolus, once

MEDICATIONS

- ☐ **tranexamic acid** 1,000 mg, IVPB, once, Infuse over 10 minutes. MAX rate 100mg/min., supplied as bag

LABORATORY

Blood Bank

- ☐ **Cryoprecipitate** Blood, Stat collect, 10 Unit(s) Infuse over 10-30 minutes.
- ☐ **Transfuse Cryoprecipitate** 10 unit(s), Infuse over 10-30 minutes
- ☐ **Blood Bank Hold** Blood, Stat collect, T;N

Administer additional dose of Cryoprecipitate for Fibrinogen level LESS than 150 mg/dL

- ☐ **Cryoprecipitate** Blood, Stat collect, 10 Unit(s) Infuse over 10-30 minutes.
- ☐ **Transfuse Cryoprecipitate** 10 unit(s), Infuse over 10-30 minutes

STAT Labs

- ☒ **PT INR** Blood, Stat collect, T;N
- ☒ **APTT** Blood, Stat collect, T;N
- ☒ **Fibrinogen** Blood, Stat collect, T;N
- ☒ **D-Dimer** Blood, Stat collect, T;N
- ☒ **CBC + Differential** Blood, Stat collect, T;N
- ☒ **Type and Cross RBC** Blood, Stat collect, T;N
- ☒ **Blood Glucose Monitoring POC** once

DIAGNOSTIC TESTS

CT Head w/o Contrast STROKE CODE ONLY

- ☐ Stat, Reason: Acute stroke symptoms--post thrombolytic hemorrhagic bleed
- ☐ Stat, Reason: Acute stroke symptoms--facial droop, Transport Mode: Call Floor
- ☐ Stat, Reason: Acute stroke symptoms--left hemiplegia/hemiparesis, Transport Mode: Call Floor
- ☐ Stat, Reason: Acute stroke symptoms--right hemiplegia/hemiparesis, Transport Mode: Call Floor
- ☐ Stat, Reason: Acute stroke symptoms--vertigo/imbalance/loss of coordination, Transport Mode: Call Floor
- ☐ Stat, Reason: Acute stroke symptoms--visual deficits, Transport Mode: Call Floor
- ☐ Stat, Reason: Acute stroke symptoms--weakness, generalized, Transport Mode: Call Floor
- ☐ Stat, Reason: Altered mental status, Transport Mode: Call Floor

RESPIRATORY

- ☒ **Oxygen Therapy** Titrate to SaO2 GREATER than 94%

ABG-RCP

- ☐ once, Stat, Arterial Blood Gases, Room Air
- ☐ once, Stat, Arterial Blood Gases, Current Settings
- ☐ **RT Protocol**
- ☐ **RT Protocol (SGH)**

Clinical Performance Measures per Joint Commission (measured on a monthly basis)

Program Concept	Acute Stroke Ready Hospital (ASRH) (SCOR)	Primary Stroke Center (PSC) (SMH, SCVMC)	Comprehensives Stroke Center (CSC) (SGH)
Clinical Performance Measures	ASR-I-1 Thrombolytic Therapy (IP) ASR-OP-1 Thrombolytic Therapy (Drip And Ship) ASP-OP-2 Door To Transfer To Another Hospital ASR-IP-3 Discharged On Antithrombotic Therapy	STK – 1 Venous Thromboembolism (VTE) Prophylaxis STK-2 Discharged on Antithrombotic Therapy STK -3 Anticoagulation Therapy for Atrial Fibrillation/Flutter STK-4 Thrombolytic Therapy STK-5 Antithrombotic Therapy by End of Hospital Day 2 STK -6 Discharged on Statin Medication STK-8 Stroke Education STK-10 Assessed for Rehabilitation STK-OP 1 Door To Transfer for Care CSTK-1 NIHSS Score Performed for Ischemic Stroke Patients	In addition to PSC requirements: CSTK -3 Severity Measurement for ICH and SAH CSTK -4 Procoagulant Reversal Agent initiation for ICH CSTK-5 Hemorrhagic Transformation CSTK-6 Nimodipine Treatment Administered CSTK-8 Thrombolysis in Cerebral Infarction Post treatment Reperfusion Grade CSTK-9 Arrival time to Skin Puncture CSTK-10 Modified Rankin Score (mRS at 90 days) CSTK-11 Timeliness to Reperfusion: Arrival time to TICI 2B r higher CSTK-12 Timeliness of Reperfusion: Skin Puncture to TICI 2B or Higher

Ensure That These Core Standards are Completed:

- Venous Thromboembolism (VTE) Prophylaxis
- Discharged on Antithrombotic Therapy
- Anticoagulation Therapy for Atrial Fibrillation/Flutter
- Thrombolytic Therapy
- Antithrombotic Therapy by End of Hospital Day 2
- Discharged on Statin Medication
- Stroke medication reconciliation
- Assessed for Rehabilitation
- NIHSS Score Performed for Ischemic Stroke Patients

High Intensity Statin Prescribed at Discharge

Ischemic Stroke and TIA patients (≤ 75 years of age) prescribed high-intensity statin therapy at discharge OR, if > 75 years of age, are prescribed at least moderate-intensity statin therapy at discharge. LDL <70 as a standalone reason for not prescribing statin dose (moderate/high intensity) is not considered a contraindication.

Included Populations: Ischemic Stroke and TIA

Contraindications accepted for this therapy:

☐ Intolerant to moderate or great intensity (must document and relate issue to statin)

☐ No evidence of atherosclerosis (cerebral, coronary, carotid or peripheral vascular disease, documented and related to statin)

☐Patient, family or healthcare decision-maker refusal

☐Other documented reason (must document and relate issue to statin)

What can you do to ensure the highest level of care for stroke patients?

- Respond to in house stroke codes
- Use the order sets, they are the best way to ensure that stroke core measures are met and Joint Commission recommendations are followed.
- Know that if you do not call a stroke code, CT's and other tests will be delayed
- Connect with Neurology as part of the process
- Validate documentation is complete
- Ensure all steps of the inpatient stroke code algorithm are followed
- Calling a stroke code is never the wrong thing to do, anyone can call a stroke code and ensure resources are available for further assessment.

THANK YOU

Please contact your hospital stroke manager for any other questions:

Sharp Memorial Hospital	Advanced Primary Stroke Center	Chris Sundby
Sharp Coronado Hospital	Acute Stroke Ready Hospital	Elisabeth Green
Sharp Chula Vista Hospital	Advanced Primary Stroke Center	Crystal Limonta
Sharp Grossmont Hospital	Comprehensive Stroke Center	Diane Royer

SHARP