

PATIENT PRESENTING AND FOUND TO HAVE ACUTE INTRACEREBRAL HEMORRHAGIC STROKE

POLICY:

After CT Radiology Report Patient is identified as Acute Intracerebral Hemorrhagic (ICH) Stroke

Patients presenting to [FACILITY NAME] with symptoms of an acute stroke symptoms will be emergently assessed, treated and admitted or transported to [IDENTIFIED FACILITY] after assessment and medical stabilization. If after CT, patient identified as Acute Intracerebral Hemorrhagic (ICH), the risk for early neurological deterioration and the high rate of poor long-term outcomes underscores the need for aggressive early management

PROCEDURE:

Emergent evaluation of Acute Stroke presentation (See Evolution of Acute Stroke Symptoms)

1. **A baseline Severity Score should be documented (i.e., NIHSS or ICH Score *See score on Page 4)**
2. **Emergent Notification of Receiving Facility for Further Management if Necessary**
 - a. **Transfer**
 - i. Notify the receiving facility of the patient transfer request
 - ii. Determine with receiving facility appropriate transfer (air or ground)
3. Obtain **12-lead ECG**
4. Obtain **O2 Saturation**
5. **Document patient's weight** (in kg if possible).
6. **Blood pressure monitoring** q 15 minutes
7. Place on **cardiac monitoring**
8. Elevate Head of Bed 30 degrees
9. Prepare for immediate transfer to a facility with **Neurosurgery** coverage.

Blood Pressure

Immediate aggressive management of extreme Blood Pressures is important. Follow the directions of the Accepting Facility

1. *For ICH presenting with a SBP between 150 and 220 mmHg without contraindication to acute blood pressure treatment consider active lowering of SBP to 140 mmHg is safe.*
2. *If SBP is >220 consider aggressive reduction of blood pressure control with continuous intravenous infusion and frequent BP monitoring.*
3. *Recommended medications for BP management are (Rose, JC, Mayer, SA):*
 - a. **Labetalol push:** Initial bolus of 20 mg IV followed by 20 to 80 mg IV bolus every 10 minutes (maximum 300 mg)
 - b. **Labetalol drip:** 0.5 to 2 mg/minute as IV loading infusion following an initial 20 mg IV bolus (maximum 300 mg).
 - c. **Nicardipine drip:** 5 to 15 mg/hour as IV infusion. Some patients may require up to 30 mg/hour.

Hemostasis and Coagulopathy

IMPORTANT: DO NOT DELAY TRANSFER TO ADMINISTER MEDICATIONS

1. *Factor Replacement Therapy or platelets, should happen as soon as possible, IF readily available (Door to Needle goal 90 min)*

Patients with severe coagulation factor deficiency or severe thrombocytopenia should receive appropriate factor

replacement therapy. added

- 2.
3. Patients whose INR is elevated because of vitamin K antagonists (VKA), most common Warfarin, should receive therapy to replace vitamin K-dependent factors and correct the INR, and receive intravenous vitamin K (Kalus JS).
 - a. **4PCC (KCentra) - recommended:** INR 1.8-3.9: 25 units/Kg (max. 2500 units), INR 4-6: 35 units/kg (max 3500 units), INR >6: 50 units/Kg (max. 5000 units).
 - b. **IV vitamin K (phytonadione):** recommended dose is 5 to 10 mg. The effect takes up to 12-24 hours for full effect (Dezee KJ, Shimeall WT, Douglas KM, Shumway NM, O'Malley PG)
 - c. **Fresh Frozen Plasma (FFP):** dose will depend on INR. Several units might be needed. A practical formula is 1-2 units up to 20 ml/Kg. May repeat every 6-12 hours.
4. For patients with ICH who are taking dabigatran, rivaroxaban, or apixaban treatment with FEIBA, or other PCCs or Recombinant factor VIIa (rFVIIa) might be considered on an individual basis. The following are based upon manufacturer information.
 - a. **Pradaxa:**
 - i. Idarucizumab (Praxbind): recommended dose in 5g IV x 1 either bolus or infusion.
 - b. **Apixaban/Rivaroxaban:**
 - i. **Andexxa:** dosing will depend on patient's current apixaban or rivaroxaban dose
 - **Low dose: 400 mg IV bolus ~ 30 mg/min followed by an IV infusion of 4 mg/min up to 120 minutes (low dose is Apixaban ≤ 5mg / Rivaroxaban ≤ 10 mg)**
 - **High dose: 800 mg IV bolus followed by an IV infusion of 8 mg/min up to 120 minutes (high dose: Apixaban > 5mg / Rivaroxaban > 10 mg or unknown dose)**
 - ii. **Consider 4PCC (Kcentra) 50 units/Kg (max. 5000 units).**

Seizures and Anti-Convulsant Drugs:

1. Prophylactic anti-convulsant medication is not recommended on all Intracerebral hemorrhagic strokes
2. Clinical seizures should be treated with anti-convulsant drugs.
3. Possible anti-convulsant medications include:
 - a. Levetiracetam (Keppra) 40 – 60 mg/Kg IV x 1 (Dewolf JL, Szalfarski JP)
 - b. Fosphenytoin 20 mg/Kg x 1 (maximum 1500 mg)

References:

Dewolf JL, Szalfarski JP. Levetiracetam use in the critical care setting. *Front Neurol.* 2013;4:121. Published 2013 Aug 23. doi:10.3389/fneur.2013.00121

Dezee KJ, Shimeall WT, Douglas KM, Shumway NM, O'Malley PG. Treatment of excessive anticoagulation with phytonadione (vitamin K): a meta-analysis. *Arch Intern Med.* 2006; *166*:391–39

Hemphill, J. Claude III, et al (2018) Clinical Performance Measures for Adults Hospitalized With Intracerebral Hemorrhage: Performance Measures for Healthcare Professional from the American Heart Association/American Stroke Association. *Stroke.* 49, doi: 10.1161/STR.0000000000000171

Hemphill, J. Claude III, et al (2015) Guidelines for the Management of Spontaneous Intracerebral Hemorrhage: A Guideline for Healthcare Professionals From the American Heart Association/American Stroke Association. *Stroke.* 46, doi: 10.1161/STR.0000000000000069

Kalus JS. Pharmacologic interventions for reversing the effects of oral anticoagulants. *Am J Health Syst Pharm.* 2013 May 15;70(10 Suppl 1):S12-21. doi: 10.2146/ajhp130041. PMID: 23640528.

Rose, J.C., Mayer, S.A. Optimizing blood pressure in neurological emergencies. *Neurocrit Care* 1, 287–299 (2004). <https://doi.org/10.1385/NCC:1:3:287>

Praxbind:

https://docs.boehringer-ingenheim.com/Prescribing%20Information/PIs/Praxbind/Praxbind.pdf?DMW_FORMAT=pdf

Andexxa: https://alexion.com/Documents/andexxa_uspi.pdf



Acute Stroke Protocol Assessment and Transfer Protocol Guidelines

- **Initiate Hospital Transfer protocol ASAP to avoid unnecessary delays.**
- Contact ED of receiving facility and ask for ED physician or Neurologist on-call
- Provide the following details when communicating with receiving facility:
 - Symptom onset time or last seen normal in as much detail as possible
 - NIHSS Score
 - Anticoagulant Use and Reversal Agent Used
- BP, glucose, and pertinent lab work
- EKG results
- Keep NPO
- Follow BP parameters as directed by Receiving Facility
- Fax documents to receiving facility
 - NIHSS form
 - ICH Score
 - Labs when available
 - EKG
- Send or Load CT results
- Complete Acute Stroke Assessment and Transfer Documentation Form and send with Patient or fax.

Intracerebral Hemorrhage Score

Purpose: To help with lead discussion with family regarding goals of further care and treatment

Glasgow Coma Scale

GCS 3 - 4:	2 points
GCS 5 - 12:	1 point
GCS 13 - 15:	0 points

Intracerebral hematoma (ICH) volume

ICH \geq 30cm ³ :	1 point
ICH < 30cm ³ :	0 points

Intraventricular hemorrhage

Yes:	1 point
No:	0 points

Infratentorial origin of ICH

Yes:	1 point
No:	0 points

Age

\geq 80 years:	1 point
< 80 years:	0 points

Interpretation

30-day mortality increases as the (summed) ICH score increases:

- ICH Score 0: no mortality
- ICH Score 1: 13%
- ICH Score 2: 26%
- ICH Score 3: 72%
- ICH Score 4: 97%
- ICH Score 5: 100%
- ICH Score 6: 100% (estimated)

References:

Hemphill III J. , Bonovich, Besmertis, Manley, & Johnston (2001) The ICH Score A simple Reliable Grading Scale for Intracerebral Hemorrhage. *Stroke*. 2001;32:891-897.