PATIENT PRESENTING WITH ACUTE INTRACEREBRAL HEMORRHAGIC STROKE TO [FACILITY NAME]

POLICY:
Patients presenting to [FACILITY NAME] with symptoms of an acute intracerebral hemorrhage (ICH) will be emergently assessed, treated and admitted or transported to [IDENTIFIED FACILITY] after assessment and medical stabilization. ICH is a medical emergency. The risk for early neurological deterioration and the high rate of poor long-term outcomes underscores the need for aggressive early management.

PROCEDURE:
Patient presents with hemorrhagic stroke:

Emergent Evaluation: Patients with hemorrhagic stroke are admitted and evaluated emergently
1. Brain Imaging. Order STAT non-contrast head CT; specify Dx: "Emergent Acute Stroke"
2. IV Access: Establish IV line, preferably 2 separate lines on opposite arms.
3. STAT Laboratories:
   a. CBC & platelet count
   b. PT, PTT, INR
   c. Serum electrolytes, BUN, creatinine, glucose
   d. Markers of cardiac ischemia (i.e. troponin, CK-MB, CK)
   e. Urine toxicology
   f. Glucose finger stick
4. A baseline Severity Score should be documented (i.e., NIHSS or ICH Score *See score on Page 4 *)
5. 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)
6. Obtain 12-lead ECG
7. Obtain O2 Saturation
9. Blood pressure monitoring q 15 minutes
10. Place on cardiac monitoring
11. Elevate Head of Bed 30 degrees
12. Prepare for immediate transfer to a facility with Neurosurgery

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:
   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.
   d. Hydralazine push: 10 to 20 mg IV; repeat as needed.
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)

2. Patients with severe coagulation factor deficiency or severe thrombocytopenia should receive appropriate factor replacement therapy.

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.
   a. 4PCC (KCenta) - 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: recommended dose is 5 to 10 mg. The effect takes 12 – 24 hours.
   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 rFVIIa might be considered on an individual basis.
   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
   b. Fosphenytoin 20 mg/Kg x 1 (maximum 1500 mg)
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 ≥ 30cm³: | 1 point |
| ICH < 30cm³: | 0 points |

### Intraventricular hemorrhage

| Yes: | 1 point |
| No: | 0 points |

### Infratentorial origin of ICH

| Yes: | 1 point |
| No: | 0 points |

### Age

| ≥ 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)