



2PO

Admit to Critical Care SICU
Diagnosis _____
Condition _____
Allergies _____
HT _____ cm WT _____ kg

- Aneurysm
- Stroke
- SAH
- VP Shunt
- Decompressive Craniectomy
- AVM
- Cranial Bypass
- SDH
- Other _____
- Tumor
- Trauma
- ICH

Ventriculostomy yes no
PbtO2 monitor yes no

Start if Checked

- Consult _____
- √ Vital signs/Neurologic Checks every 1 hr and PRN.
- √ Alert Neurosurgeon/designee for change in neuro status
 - » Worsening headache
 - » Decrease in level of consciousness
 - » Decrease in motor strength in arm/leg
 - » Drift in upper extremity
 - » Onset of aphasia (if dominate hemisphere)
- Activity: Bed rest with head of Bed up 30° for comfort
 Bed rest for _____ hrs then out of bed four times a day, may elevate head of Bed up 30° for comfort
- √ IV NS with 20 meq KCL/L at _____ mL/hr
- Diet NPO Clear Liquids Other _____
- √ Intake/Output (Strict ongoing I/O hourly for fluid balance)
- √ Daily Weight
- Minimally invasive Hemodynamic Monitoring CVP/ScvO2 and use FloTrac® Arterial Line for calculated Cardiac Output.
- √ Nasal Gastric Tube to low continuous suction if on ventilator
- √ Temp sensing Foley to drainage
- √ Supplemental O2 to keep SaO2 equal to or greater than 94%
- √ Incentive Spirometer every one hour while awake
- √ Sequential Compression Stockings
- √ Maintain Systolic Blood Pressure greater than _____ mmHg and less than _____ mmHg
- Drain Ventriculostomy when ICP is _____ mmHg or greater.
- Continuously drain Ventriculostomy to head pressure _____ mmHg (**leave open to drain**)
- Doppler Bypass graft site every _____ hours: Notify Neurosurgeon if decrease in signal noted.

LabsCXR/EKG/CT:

- √ Daily CBC, ECMP, Serum Osmolality, Triglyceride (If on propafol)
- √ ECMP, Serum Osmolality every 6 hours if patient receiving Mannitol
- √ Phenytoin level 30 minutes prior to 4th dose (if on Fosphenytoin). Hold 4th dose until level resulted/reviewed
- √ For Temperature equal to or greater than 38.5°C Culture: Blood x 2, Sputum and Urine (repeat every 48 hours unless other wise ordered)

Reason for Exam: Post Cranial Surgery

- Upright Chest Xray every AM: Comments - **rule out pulmonary edema**
- CT scan of brain without contrast in AM post procedure: Comments - **rule out infarct/hydrocephalus**
- CT Brain with Perfusion Scan
- Post OP Shunt Survey: Check Shunt placement

- Upright Chest X-ray every AM: **rule out pulmonary edema**
- CT scan of brain without contrast in AM post procedure: **rule out infarct/hydrocephalus**

MEDICATIONS:

- Esomeprazole (Nexium) 40 mgIVP daily or Omeprazole (Prilosec) 40mg P0 daily.
- Ranitidine (Zantac) 50mg IVPB every 8 hours or Ranitidine (Zantac) 150 mg PO every 12 hours.

MEDICATIONS CONTINUED:

- Start if Checked** √ Critical Care Bowel Program.
- √ Acetaminophen 650 mg every 4 hrs PRN PO/NG/PR for temperature greater than 38.3°C.
- √ If sodium less than 130 mEq/L, start 3% Saline IV at 30mL/hr until sodium greater than 136 mEq/L (Hold for CVP greater than 16mmHg).
- √ Ondansetron (Zofran) 4 mg IVP every 6 hrs PRN nausea
- If nausea persists in 30 minutes after Zofran give Metoclopramide (Reglan) 10mg IVP. If nausea still persists in 30 min after Reglan, give **Promethazine (Phenergan) 12.5 mg IVP.** If nausea still persists in 30 min call Neurosurgeon/designee.
- Fosphenytoin (Cerebyx): loading dose 15 mg/kg (round up to nearest 50 mg IVP (not to exceed 150 mg/min).
- Fosphenytoin (Cerebyx): 100 mg every 8 hours IVP for 7 days
- Levetiracetam (Keppra) 1000 mg IVPB (loading dose) over 15 min followed by 500 mg IVPB every 12 hr
- Dexamethasone _____ mg IV every _____ hours times _____ doses
- ASA 81 mg every day PO/NG/PR
- Clopidogrel (Plavix) 75mg every day PO/NG

For Systolic BP lowering as per specified ordered parameters:
 Keep less than _____ mmHg

- Labetalol 10-20 mg IVP every 15 minutes PRN x 4 doses (Hold if Heart Rate less than 60 per minute)
- Clevidipine (Cleviprex) IV infusion (drip conc = 0.5 mg/mL). Start at 2 mg/hr (Rate = 4 mL/hr). Titrate every minute to keep SBP at target to max of 32 mg/hr. Do not use for more than 72 hours.
- Nicardipine (Cardene) IV infusion (standard drip conc = 0.2 mg/mL): Start at 5mg/hr (Rate = 25 mL/hr) Titrate 2.5-5mg/hr increments every 5 minutes to maximum of 15 mg/hr (Rate = 75mL/hr).

For Systolic BP raising as per specified ordered parameters:
 Keep greater than _____ mmHg

- Phenylephrine 0.1-2 mcg/kg/min IV infusion- Titrate to maintain systolic BP within defined parameter
- Dopamine 5-10 mcg/kg/min IV infusion- Titrate to maintain systolic BP within defined parameters

- Hydrocodone/APAP (5mg/325mg) 1 tablet PO every 4 hours as needed for mild pain/headache (Pain Scale 1-3)
- Hydrocodone/APAP (5mg/325mg) 2 tablets PO every 4 hours as needed for moderate pain/headache (Pain Scale 4-6)
- Morphine 2 mg IVP every 2 hours as needed for severe pain/headache (Pain Scale 7 and above)
- Morphine 2 -4 mg IVP every 1 hour as needed for severe pain/headache (Pain Scale 7 and above)
- Hydromorphone (Dilaudid) 0.5-2 mg IVP every 2 hours as needed for moderate/severe pain/headache (pain scale 4 or greater)
- Cefazolin (Ancef) 1 gram every 8 hours IVPB x _____ doses
- Vancomycin 1 gram every 12 hours IVPB x _____ doses

Date

Time

Physician Signature and Number



POST CRANIAL SURGERY ORDERS

Medications Continued

- Call MD day 3 and obtain appropriate anticoagulation orders
- Others _____

CONTINUED ORDERS IF PATIENT IS ON:

Ventilator and/or has Ventriculostomy and/or PbtO2 sensor

Analgnesia/Sedation: (see SAD protocol).

- Morphine IV infusion starting at 2mg/hr and titrate up to 10 mg/hr for a Behavioral Pain Scale 3
- Midazolam (Versed) IV infusion starting at 1mg/hr and titrate to 5mg/hr for deep sedation
- Propofol starting at 10 mcg/kg/min and titrate up to 50 mcg/kg/min IV infusion if **ICP greater than 20 or if PbtO2 less**
- Neuromuscular Blockade as needed for ICP control, shivering and or ventilator control.

Cisatraurium (Nimbex) continuous infusion: 1st bolus 0.2mg/kg (from vial) followed by continuous drip starting at 0.5mcg/kg/min. May titrate to maximum of 10 mcg/kg/min to maintain 2/4 train of four (TOF). While on Neuromuscular blocker check/document TOF every one hour. In the event that TOF is less than 2/4 turn drip off for one hour then recheck. Resume drip when TOF is 2/4 at 1/2 last dose and continue to check TOF every hour and follow previous directions

- Maintain temperature 36-37° C, temp greater than 38.5° C pan-culture and will consider **Intra Vascular cooling System**

√ Resting ankle splints/heal protectors

Titrate PaCO2 to keep **ICP less than 20 mmHg** and

PbtO2 mmHg greater than 20mmHg

Target PaCO2 34-40 mmHg. Avoid hyperventilation

Other _____

Maintain ICP less than 20mmHg. When out of range

Determine optimal CPP (evidenced by ICP less than 20mmHg and PbtO2 greater than 20mmHg if present).

Target CPP is between 60-80 mm Hg. When out of range:

1st address volume:

- Keep CVP 6-10 mmHg with 250 mL **Normal Saline** IV fluid challenge over 15-20 min. as needed to achieve set parameters.
- After 1 liter of Normal Saline if target CVP not reached give **5% Albumin 250mL** IV over 15-30 min (continue use of Albumin for 30 days). Repeat every 4 hours until target CVP is reached.
- Administer **Packed RBCs** IV to increase Hematocrit to greater than 30% if PbtO2 less than 20 mmHg.

2nd Once CVP is within range and CPP less than 60mmHg

add vasopressors:

- **Phenylephrine** (Neosynephrine) 0.1-2 mcg/kg/min titrate to achieve set parameter. (if Neosynephrine has reached 2 mcg/kg/min and set parameter is not met, augment with dopamine)
- **Dopamine** 5-10 mcg/kg/min titrate to achieve set parameter

- Hypertonic Saline 3% 250 mL over 20 minutes every 4 hours while ICP greater than 20mmHg. Hold for Serum Sodium less than 134mEq/L or greater than 155 mEq/L. Serum Sodium every 6 hours while receiving sodium.
- Mannitol 1 gm/kg IV bolus followed by 250mL NS over 1 hour if; keep serum osmolality less than 315 mOsm/kg and maintain euvoolemia. Hold Mannitol if Sodium is 155 mEq/L or greater. If ICP remains equal to or greater than 20mmHg, 20 minutes after Mannitol given, **Notify Neurosurgeon or designee for further orders**
- Mannitol _____ grams every _____ hours. Hold for serum Sodium greater than 155 mEq/L or serum osmolality greater than 315 mOsm/kg

If Brain Tissue Oxygen sensor (Licox) present keep PbtO2 greater than 20mmHg. If PbtO2 is less than 20 mm Hg test response to 100% FI02 for 15 min while manipulating other parameters. If no change in PbtO2 notify Neurosurgeon or designee. If rise in PbtO2 noted, maintain 100% FI02 until PbtO2 is greater than 20mmHg then titrate FI02 to maintain PbtO2 greater than 20mmHg and SaO2 at 100.

Date

Time

Physician Signature and Number



**POST
CRANIAL SURGERY
ORDERS**