Brain tumor Algorithm
Review definition and pathophysiology

Assess for the presence of risk factors
Exact etiology unknown
Primary brain cancer
Metastatic brain cancer
Prior history of irradiation to the head
Increased incidence with age
Seen in white > other races with exception of meningioma (seen > in black population)
Family history of brain tumors
Inherited diseases, such as neurofibromatosis, tuberous sclerosis, multiple endocrine neoplasia (type 1), and retinoblastoma
Occupational exposure to chemicals

Assess for the presence of s/s:
- New onset HA
- Nausea/vomiting
- Visual/hearing disturbance
- Change in sensation/speech
- Difficulty walking
- Change in behavior/confusion
- Seizure
- Endocrine disorders

Initiate client education for Health Seeking Behaviors to identify:
- Discuss that the exact cause of brain tumors may not be known.
- Review known risk factors
- Signs and symptoms for early detection of disease
- Encourage periodic health exam

Yes

Are Risk Factors Present?

No

Assess for the presence of s/s:

Are positive findings present?

Follow plan of care for PC: Increased ICP
PC: seizures
Care of the surgical client
Care of the cancer client if malignant
Risk for disuse syndrome

Newly diagnosed?

Potentially unstable?

Initiate the plan of care for a Risk For Ineffective Therapeutic Regimen management
- Review course and progression of CNS lesions
- Discuss the s/s of complications of increased ICP, seizures, hydrocephalus, hemorrhage and when to seek consultation
- Review diagnostics testing; CT, PET, MRI, CSF testing, Biopsy, EEG
- Discuss treatment; surgery(cyberknife), radiation, chemotherapy and steroids

Box 1

Box 2
### Potential Complication: Increased ICP

**ASSESS s/s of Increased ICP**
- change in mental status/consciousness
- focal neurological deficit (numbness, parasthesia, paresis/paralysis, blurred vision, cranial nerve deficit, headache, nausea, vomiting)

**Assess for contributing factors:**
- Aneurysm rupture and subarachnoid hemorrhage
- Brain tumor
- Encephalitis
- Hydrocephalus
- Hypertensive brain hemorrhage
- Intraventricular hemorrhage
- Meningitis
- Severe head injury
- Subdural hematoma
- Status epilepticus
- Stroke

**Monitor for presence of the disorder**
- Monitor neurochecks according to institution policy for deviation (NIH stroke scale vs. modified Glasgow coma scale)
- Initiate pulse oximetry to identify desaturation
- Monitor results of ABGs to ensure adequate oxygenation and cerebral perfusion (hypercapnia and hypoxemia aggravate cerebral edema)
- Initiate hemodynamic monitoring to identify cushings triad
- Initiate cardiac monitoring to identify bradycardia and dysrhythmia
- Initiate ICP monitoring as ordered
- Monitor temperature for elevations that increase ICP
- If trauma is associated with event, clear spine x ray
- Monitor results of diagnostic testing; PET, CT, MRI, lumbar puncture
- Monitor BMP for electrolyte disturbances frequently seen in associated endocrine dysfunction
- Monitor bleeding times for risk for hemorrhage
- Monitor I/O and daily weights
- Monitor CBC for signs of infection and aggravating anemia

### DO

**Perform nursing actions to control ICP**
- Initiate ABCs, airway, ventilation and oxygen, IV access
- Reduce excess environmental stimulation, and administer barbiturates and anesthetics as prescribed
- HOB at 30 degrees (C spine clear in trauma) if SBP normal and CPP > 60. If SBP is low & CPP is compromised, place client in supine position and initiate vasopressor support
- Avoid hip/knee flexion, valsalva, coughing
- Ensure neutral neck position
- Check ET tape to ensure it does not impede venous drainage
- Administer steroids, Mannitol as prescribed to reduce edema
- Administer anticonvulsants to control seizures
- Administer antipyretics to control temperature and initiate cooling strategies and required
- Maintain ICP monitoring systems according to agency protocol
- Initiate ventricular drainage in presence of elevated ICP according to ordered

**Performs nursing actions to control contributing factors & minimize complications**
- Treat hypotension
- Treat hyperthermia
- Treat CSF infection
- Initiate seizure precautions
- Provide care for disuse syndrome

### CALL

**Change in mental status, GCS score, or new focal neurological deficit. CSF becomes bloody, purulent or leaking is noted, problems with ICP waveform or equipment**

**Initiate ABC’s provide supportive care, call ready response team and MD**

### Outcomes/Benchmarks:
- Alert and oriented X 3, No focal neurological deficit (numbness, parasthesia, paresis/paralysis, blurred vision, cranial nerve deficit, headache, nausea, vomiting)
- ICP< 20, GCS no deterioration, PACO2 within normal limits
- 100<SBP< 140, CPP> 60, 60<HR<100, 12<RR<20 no signs of Cushings triad