STANDARDIZED PROCEDURE
INTRAVENTRICULAR CHEMOTHERAPY VIA OMMAYA RESERVOIR (Adult, Peds)

I. Definition

The administration of chemotherapy via Ommaya Reservoir into cerebrospinal fluid (CSF) for treatment of previously diagnosed central nervous system (CNS) involvement by leukemia and lymphoma or other malignancy. The procedure is also used for withdrawal of CSF for laboratory analysis in patients with known CNS malignancy.

II. Background Information

A. Setting:

The setting (inpatient vs outpatient) and population (adults vs pediatrics) for the Advanced Health Practitioner (AHP) is determined by the approval of the privileges requested on the AHP Privilege Request Form. If the procedure is being done on a Pediatric patient, make sure Child Life is involved and use age appropriate language and age appropriate developmental needs with care of children, as appropriate to the situation.

B. Supervision:

The necessity of this procedure will be determined by the Advanced Health Practitioner in collaboration with the supervising physician or his/her designee. Designee is defined as another attending physician who works directly with the supervising physician and is authorized to supervise the Advanced Health Practitioner.

Direct supervision will not be necessary once competency is determined, as provided for in the procedure. The Advanced Health Practitioner will notify the physician immediately upon being involved in any emergency or resuscitative events or under the following circumstances:

1. Patient decompensation or intolerance to the procedure
2. Bleeding that is not resolved
3. Outcome of the procedure other than expected

C. Indications

1. Patients with a surgically implanted Ommaya reservoir and recent diagnosis or history of CNS malignancy.
2. Patients with an Ommaya reservoir and meningeal signs or symptoms such as nuchal rigidity and headaches, without evidence of increased intracranial pressure.
3. For patients with fever, change in mental status, headaches or other signs and symptoms of meningitis or encephalitis once other etiologies have been ruled out.

D. Precautions/Contraindications:

1. Evidence of increased intracranial pressure: increased blood pressure with widening pulse pressure, papilledema, bulging Ommaya or significant decrease in the level of consciousness until imaging studies have ruled out mass effect.
2. Focal neurological findings and/or lesions or imaging studies with significant mass effect.
3. Cutaneous infection at the site of puncture.

III. Materials

Chemotherapy agents to include preservative-free methotrexate 12 mg, and/or Ara-C 50 mg, and hydrocortisone 50 mg (in preservative- free normal saline), 10 ml preservative-free normal saline in syringe, standard LP tray, sterile gloves, povidone iodine solution, 25 gauge butterfly needle and stopcock.

IV. Intraventricular Chemotherapy via Ommaya Reservoir Procedure

A. Pre-treatment evaluation:

1. Subjective
   a. History
      i. A previous history of pancytopenia, renal insufficiency, liver dysfunction, seizures, cerebral bleeding, head trauma should be elicited.
2. Signs and Symptoms
   a. Ommaya reservoir is intact and no evidence of any erythema or swelling. Headache, confusion, altered mental status, nuchal rigidity or fever.
   b. Lower extremity weakness, back pain, or difficulty with elimination or ambulation.
3. Objective
   a. Patient Evaluation
      i. General appearance, vital signs, with evaluation for fever.
      ii. Focal neurologic and mental status examination.
      iii. Assess for focal neurologic findings. Evaluate for evidence of increased intracranial pressure: high blood pressure, widening pulse pressure, papilledema, decreased level of consciousness, and bulging of Ommaya. Evaluate for evidence of localized infection or metabolic abnormalities.

b. Diagnostics: Previous Ommaya CSF results, (MRI, CT results if applicable), Current CBC with differential and platelets, electrolytes, creatinine and other chemistries as indicated.

B. Procedure:

1. After providing the purpose, risks and benefits, and steps of the procedure obtain informed consent from the patient or appropriate legal designee.
2. Obtain chemotherapy to be given from pharmacy. Chemotherapy to be prepared by pharmacy with preservative free medications and diluents: methotrexate 12 mg and/or Ara-C 50 mg and/or hydrocortisone 50 mg dependent on treatment protocol/schedule as determined by attending physician.
3. Assemble supplies.
4. Compress Ommaya bulb twice to re-inflate with fresh CSF for analysis
5. Set up the LP tray.
6. Don sterile gloves.
7. Using sponge applicators from LP tray, scrub skin over reservoir vigorously three times with povidone iodine solution – allow to dry 2 minutes.
8. Drape the patient.
9. A 25 gauge butterfly needle is inserted directly into reservoir at a perpendicular angle to skin, and a volume of cerebrospinal fluid equal to chemotherapy drug volume (usually 2 – 6 ml) is removed. Withdraw CSF slowly over approximately 1 minute.
10. Attach chemotherapy syringe and stopcock and inject chemotherapy over approximately 5 minutes.
11. Turn stopcock, remove chemotherapy syringe. Attach syringe containing preservative free normal saline and flush needle and tubing with approximately 1 ml preservative free saline.
12. Remove needle and cleanse skin with saline and apply spot bandage to site.
13. Place 1-2 ml CSF in each of 4 specimen tubes and send to lab for cell count, glucose, protein, cytology and other tests as indicated.

C. Post-Procedure:

1. Assess patient for possible side-effects.
2. Document pretreatment evaluation, informed consent, timeout, procedure, including type and size of needle, patient response, characteristics of CSF, chemotherapy administered, amount of CSF withdrawn, what tests ordered on

specimens, patient follow-up instructions including anti-emetics if necessary, as well as any complications.

D. Follow-up treatment:

The Advanced Health Practitioner will review all laboratory findings with attending physician who will determine appropriate follow-up.

V. Documentation:

A. Documentation is in the electronic medical record

1. Documentation of the pretreatment evaluation and any abnormal physical findings.
2. Record the time out, indication for the procedure, procedure, EBL, the outcome, how the patient tolerated the procedure, medications (drug, dose, route, & time) given, complications, and the plan in the note, as well as any teaching and discharge instructions.

B. All abnormal or unexpected findings are reviewed with the supervising physician.

VI. Competency Assessment:

A. Initial Competence

1. The Advanced Health Practitioner will be instructed on the efficacy and the indications of this therapy and demonstrate understanding of such.
2. The Advanced Health Practitioner will demonstrate knowledge of the following:
   a. Medical indication and contraindications of Intraventricular Chemotherapy
   b. Risks and benefits of the procedure
   c. Related anatomy and physiology
   d. Consent process (if applicable)
   e. Steps in performing the procedure
   f. Documentation of the procedure
   g. Ability to interpret results and implications in management.
3. The Advanced Health Practitioner will observe this procedure at least three in its entirety.

4. The Advanced Health Practitioner will perform **three** treatments/procedures under the direct observation of the supervising physician and such additional procedures as may be necessary to verify clinical competence.
5. The Advanced Health Practitioner will ensure the completion of competency sign off documents and send them directly to the medical staff office.
6. The Advanced Health Practitioner will ensure the completion of competency sign off documents and provide a copy for filing in their personnel file and a copy to the medical staff office for their credentialing file.

B. Continued proficiency

1. The Advanced Health Practitioner will demonstrate competence by successful completion of the initial competency.
2. Each candidate will be initially proctored and signed off by an attending physician. Advanced Health Practitioner must perform this procedure at least **three** times per year. In cases where this minimum is not met, the attending, must again sign off the procedure for the Advanced Health Practitioner. The Advanced Health Practitioner will be signed off after demonstrating 100% accuracy in completing the procedure.
3. Demonstration of continued proficiency shall be monitored through the annual evaluation.
4. A clinical practice outcomes log is to be submitted with each renewal of credentials. It will include the number of procedures performed per year and any adverse outcomes. If an adverse outcome occurred, a copy of the procedure note will be submitted.

VII. RESPONSIBILITY

Questions about this procedure should be directed to the Chief Nursing and Patient Care Services Officer at 353-4380.

VIII. HISTORY OF POLICY

Revised May 2012 by Subcommittee of the Committee for Interdisciplinary Practice
Reviewed May 2012 by the Committee on Interdisciplinary Practice
Prior revision October 2008
Approved May 2012 by the Executive Medical Board and the Governance Advisory Council.