Disclaimer: This algorithm has been developed for MD Anderson using a multidisciplinary approach considering circumstances particular to MD Anderson's specific patient population, services and structure, and clinical information. This is not intended to replace the independent medical or professional judgment of physicians or other health care providers in the context of individual clinical circumstances to determine a patient's care.

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¹ Adult Hematologic Services include Stem Cell Transplant (SCT), Leukemia, and Lymphoma/Myeloma

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Making Cancer History®

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A

Yes

requirements

PRESENTATION PRE-PROCEDURE ASSESSMENT

Mobile Procedure Team (MPT) inpatient/outpatient

Referring provider to complete service specific lumbar puncture (LP) ordering tool

- Assess patient² and determine level of sedation needed³
- o Indicate the need for general or conscious sedation within the order. The procedure will then be scheduled through Anesthesia Support.
- CT head without contrast or MRI brain with and without contrast obtained within 30 days of procedure request⁴
- If clinically indicated, ensure spine imaging from any of the following are available within the past 90 days: CT abdomen/pelvis, CT spine, or MRI spine imaging⁴. If unavailable, order MRI spine.
- Lab parameters:
- \circ INR < 1.5 and
- Platelet count > 50 K/microliter
- For high volume taps due to multiple studies:
- o Determine the minimal volume of CSF and labs needed with ordering attending

INTRA- AND POST-PROCEDURE

- Refer to MD Anderson Standardized Protocol for Advanced Practice Registered Nurses (APRNs) and Physician Assistants (PA): Lumbar Puncture and/or Intrathecal Chemotherapy Administration
- Follow chemotherapy administration requirements⁵, if applicable, and universal procedure requirements⁶
 - o Ordering provider must have a privileged intrathecal chemotherapy provider to be available prior to start of procedure
- If failed attempt to obtain fluid, document reason in patient note; consider rescheduling procedure with sedation if indicated and/or under fluoroscopy (see Page 4)
- Document specimen collected in specimen log and in procedure note the specimen pick up request/staff name

Post procedure:

- The patient must remain supine for at least 30 minutes
- Notify Primary Team and MPT for findings of positional headache, site leak (consult Pain Service for evaluation for epidural blood patch), bleeding, or changes in neurological status post LP

met? No Findings of edema, (procedure intracranial shift. escalation metastatic lesion, mass, required⁷) bleed or hemorrhage on CT/MRI head

For MPT to perform LP, the following must be obtained from Neuro-Oncology:

• Assessment, documented clearance, and minimal volume of CSF needed

• Physician may be required to chaperone the procedure

Coagulopathy (INR > 1.5,platelet count < 50 K/microliter) • Correct coagulopathy^{3,8,9} prior to LP and refer to Box A

• If high risk for bleeding, strongly consider LP to be done under fluoroscopy (see Page 4)

For inpatient LP, use IP Mobile Procedure Team Paracentesis/Lumbar Puncture Procedure Order Set and page Mobile Procedure team via the on-call calendar.

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¹ For outpatient LP, use Neu Lumbar Puncture Orders smartset.

² Refer to Peri-Procedure Management of Anticoagulants algorithm and Peri-Procedure Management of Antiplatelet Therapy algorithm

³ If patient needs anxiolytics, refer to Anxiolysis (Minimal Sedation) for Procedures and Tests algorithm

⁴ If changes in assessment and/or recent failed attempts, more recent imaging may be required

⁵ If applicable, only authorized providers who have completed required training may administer intrathecal chemotherapy. Refer to Chemotherapy/Biotherapy (Chemotherapy) Policy (#CLN0512).

⁶ Refer to Universal Protocol for Invasive Procedures Policy (#CLN0516)

⁷MPT to escalate and consult Neuro-Oncology for recommendation

⁸ For platelet count < 50 K/microliter, consider additional platelets to infuse during the case. For INR > 1.5, consider giving FFP and/or vitamin K if clinically indicated. For patients on warfarin, higher doses of vitamin K result in extended duration of subtherapeutic INR. Consider limiting dose of vitamin K for patients with a thrombotic risk who will need to be restarted on warfarin. For patients with coagulation disorders, consult Benign Hematology.

⁹ Blood products to be ordered and transfusions coordinated by Primary Team on the inpatient unit or in the Ambulatory Treatment Center (ATC)

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Making Cancer History®

Adult

Services

Hematologic →

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B

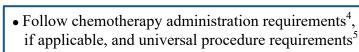
PRESENTATION

PRE-PROCEDURE ASSESSMENT

• Assess patient and determine level of sedation needed²

- o For patient needing conscious sedation, select sedation by anesthesia option on order for lumbar puncture (LP)
- Lab parameters:
- ∘ INR < 1.5
- ∘ Fibrinogen > 150 mg/dL
- ∘ Platelet count ≥ 30 K/microliter
- Confirm patient is not on anticoagulants/ antiplatelets or held according to the Peri-Procedure Management of Anticoagulants algorithm and Peri-Procedure Management of Antiplatelet Therapy algorithm
- If clinically indicated, obtain CT head
 - without contrast or MRI brain within 30 days prior to procedure²
- If clinically indicated, ensure spine imaging from any of the following are available within the past 90 days: CT abdomen/pelvis, CT spine, or MRI spine imaging³. If unavailable, order MRI spine.
- Verify consent of intrathecal (IT) chemotherapy⁴, if applicable

INTRA- AND POST-PROCEDURE



• Refer to MD Anderson Standardized Protocol for Advanced Practice Registered Nurses (APRNs) and Physician Assistants (PA): Lumbar Puncture and/or Intrathecal Chemotherapy Administration

Post procedure:

- Patient to remain supine for 30 minutes post-procedure for diagnostic LP or 1 hour post-procedure for intrathecal chemotherapy administration
- Document specimen collected in specimen log and notify Patient Services Coordinator (PSC) for scheduled pickup
- If procedure was unsuccessful due to technical difficulties, consider fluoroscopy in the future (see Page 4)
- Concern for spinal fluid leak, consult Pain Service for evaluation for epidural blood patch

• Obtain CSF for ordered tests • Administer intrathecal chemotherapy⁴, if applicable Pre-Yes diagnostic LP/IT LP with chemotherapy requirements No met? Findings of edema, intracranial Procedure team to request shift, metastatic lesion, mass, bleed or hemorrhage on CT/ Neuro-Oncology LP clearance MRI head Coagulopathy (platelet count < 30 K/microliter, INR > 1.5, refer to Box B

fibrinogen < 150 mg/dL)

Correct coagulopathy prior to LP and

¹ Adult Hematologic Services include Stem Cell Transplant (SCT), Leukemia, and Lymphoma/Myeloma

² If patient needs anxiolytics, refer to Anxiolysis (Minimal Sedation) for Procedures and Tests algorithm

³ If changes in assessment and/or recent failed attempts, more recent imaging may be required

⁴ Refer to Chemotherapy/Biotherapy (Chemotherapy) Policy (#CLN0512)

⁵ Refer to Universal Protocol for Invasive Procedures Policy (#CLN0516)



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PRESENTATION

Patient requiring

fluoroscopy (FL)

lumbar puncture

 $(LP)^{1,2}$

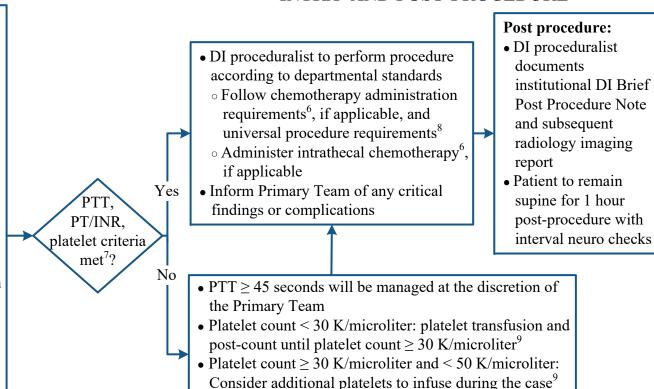
PRE-PROCEDURE ASSESSMENT

- Place order using institutional Diagnostic Imaging (DI) procedure order
 - Diagnostic procedure (without IT chemotherapy) FL
 Lumbar Puncture
 - Therapeutic (with IT chemotherapy) FL Lumbar Puncture with IT Chemotherapy
 - Include the following: anticoagulation medication history³, hemodynamic status and need for opening and closing pressures, and date of failed lumbar puncture attempt or indication for fluoroscopy
- Order cerebrospinal fluid (CSF) labs needed to be collected during the procedure
- Obtain pre-procedure labs⁴
 - o CBC, PT/INR, PTT
- o Comprehensive metabolic panel is required if procedure with anesthesia, myelogram, or cisternogram
- Obtain CT head without contrast or MRI brain within 30 days prior to procedure request for evaluation⁵
- Ensure spine imaging from any of the following are available within the past 90 days: CT abdomen/pelvis, CT spine, or MRI spine imaging⁵. If unavailable, order MRI spine.
- DI proceduralist:
 - o Review imaging as indicated
 - Verify consent of IT chemotherapy⁶, if applicable

IT = intrathecal

- ¹ FL LP is required if any of the criteria is met: Failed attempt by two different providers at MD Anderson prior to FL LP order placed. If greater than two episodes of failed attempts by two different providers at MD Anderson, proceed directly with FL LP; advanced degenerative spondylosis; scoliosis and/or significant deformity; obesity (BMI around [≈] 45 kg/m²); severe spinal stenosis
- Note: History of lumbosacral surgery with instrumentation in the area of the LP as shown on imaging will be evaluated on a case by case basis.
- ² FL LP with indication of acute bacterial meningitis will be considered urgent/emergent. All other indications will be considered routine.
- ³ Refer to Peri-Procedure Management of Anticoagulants algorithm and Peri-Procedure Management of Antiplatelet Therapy algorithm

INTRA- AND POST-PROCEDURE



and/or vitamin K^{9,10} if clinically indicated

• INR > 1.5: Consider giving fresh frozen plasma (FFP)

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Approved by the Executive Committee of the Medical Staff on 02/18/2025

⁴ Labs should be drawn within 24 hours if patient is on chemotherapy or anticoagulant; within 7 days if patient is not on chemotherapy and/or anticoagulant/antiplatelet medication or abnormal values on last laboratory result

⁵ If changes in assessment and/or recent failed attempts, more recent imaging may be required

⁶ Refer to Chemotherapy/Biotherapy (Chemotherapy) Policy (#CLN0512)

⁷ Lab criteria is INR ≤ 1.5 **and** platelet count ≥ 50 K/microliter

⁸ Refer to Universal Protocol for Invasive Procedures Policy (#CLN0516)

⁹Blood products to be ordered and transfusions coordinated by Primary Team on the inpatient unit or in the Ambulatory Treatment Center (ATC)

¹⁰ For patients on warfarin, higher doses of vitamin K result in extended duration of subtherapeutic INR. Consider limiting dose of vitamin K for patients with a thrombotic risk who will need to be restarted on warfarin.

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- MD Anderson Institutional Attachment #ATT3286 Cleaning, High-Level Disinfection, and Sterilization of Ultrasound Probes
- MD Anderson Institutional Policy #CLN0512 Chemotherapy/Biotherapy (Chemotherapy) Policy
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