

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. This algorithm should not be used to treat pregnant women.

Note: This algorithm is used by the Acute Care Procedures Team, also known as the Mobile Procedure Team.

Provider identifies patient need for therapeutic paracentesis and pages MPT proceduralist via on-call calendar

Provider and on-call MPT proceduralist to discuss:

- Reason for procedure
- If the patient is hemodynamically stable¹
- Anticoagulation medication history²
- Completion of paracentesis order set [if duplicate order for procedure was also placed to a different service (*i.e.*, IR), contact other proceduralist service after procedure completion]

Pre-paracentesis requirements:

- All calls for paracentesis must be evaluated by MPT with ultrasound³
 - Ultrasound³ must show > 3 cm zone of bowel free, fluid-filled area
- Lab parameters:
 - INR < 2 and
 - Platelets > 20 K/microliter
- For anticipated high volume taps (≥ to 4 liters):
 - Ordering attending must approve procedure
 - Patient must have a history of documented multiple high volume taps; otherwise, recommend a repeat tap for the next day
 - Patient must receive post-procedure care to include transfusion of albumin

Coagulopathy Threshold

| Procedure | Minimum platelet threshold | Threshold to infuse platelets during procedure | INR |
|--------------|----------------------------|--|-----|
| Paracentesis | 20 K/microliter | 10-20 K/microliter | 2 |

Paracentesis requirements met?

Paracentesis parameters:

- Anatomical site is limited to right lower quadrant (RLQ) and left lower quadrant (LLQ)
- The maximum amount of fluid removed is < 4 liters
- Blood pressure must be assessed before, during, and after each liter of fluid removal. Abort procedure if SBP < 95 mmHg.
- Notify primary team and consider albumin transfusion for intra- and post-procedure hypotension (SBP < 90 mmHg) and/or if > 4 liters drained
- If failed attempt to obtain fluid, document reason in patient note; consider follow up reassessment at bedside or in outpatient clinic
- Log specimen collected in specimen log and document in procedure note the specimen pick up request/staff name

Notify primary team and MPT for findings of site leak and bleeding

No (procedure escalation required⁴)

- Less than 3 cm zone identified on ultrasound
- Site other than RLQ and LLQ, post-surgical scars, wounds, catheters or ostomies over procedure site
- Coagulopathy (INR > 2 and platelets < 20 K/microliter)

Encourage primary team to re-consult MPT or schedule to outpatient paracentesis clinic when fluid reaccumulates or symptoms worsen
 Contact IR for symptomatic⁵ patient with fluid pocket in upper quadrants

Contact IR

If patient has tense ascites with warning signs of respiratory distress:

- Do not delay to correct coagulopathy
- Discuss with the on-call surgical fellow if the procedure's benefit outweighs risk

IR = Interventional Radiology
 MPT = Mobile Procedure Team

¹ Heart rate > 65 bpm, SBP > 100 mmHg and oxygen saturation > 90% (unless decreased oxygen saturation due to ascites)
² The MPT will determine anticoagulation hold times, if applicable. The [Peri-Procedure Management of Anticoagulants algorithm](#) may be utilized as well.
³ For pre-assessment and procedure, only use high level disinfected ultrasound probe that is covered with a sterile cover and sterile individual gel packs
⁴ Procedure may not be completed by MPT and may require an alternate specialized provider to perform
⁵ Symptoms include: tense abdomen, abdominal discomfort, and shortness of breath

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SUGGESTED READINGS

- De Gottardi, A., Thévenot, T., Spahr, L., Morard, I., Bresson–Hadni, S., Torres, F., . . . Hadengue, A. (2009). Risk of complications after abdominal paracentesis in cirrhotic patients: A prospective study. *Clinical Gastroenterology and Hepatology*, 7(8), 906–909. <https://doi.org/10.1016/j.cgh.2009.05.004>
- Nazeer, S., Dewbre, H., & Miller, A. (2005). Ultrasound-assisted paracentesis performed by emergency physicians vs the traditional technique: A prospective, randomized study. *American Journal of Emergency Medicine*, 23(3), 363–367. <https://doi.org/10.1016/j.ajem.2004.11.001>
- Orman, E., Hayashi, P., Bataller, R., & Barritt, A. (2014). Paracentesis is associated with reduced mortality in patients hospitalized with cirrhosis and ascites. *Clinical Gastroenterology and Hepatology*, 12(3), 496–503. <https://doi.org/10.1016/j.cgh.2013.08.025>
- Pache, I., & Bilodeau, M. (2005). Severe haemorrhage following abdominal paracentesis for ascites in patients with liver disease. *Alimentary Pharmacology & Therapeutics*, 21(5), 525–529. <https://doi.org/10.1111/j.1365-2036.2005.02387.x>
- Pines, J., Kelly, J., Meisl, H., Augustine, J., Broida, R., Clarke, J., . . . Wears, R. (2012). Procedural safety in emergency care: A conceptual model and recommendations. *Joint Commission Journal on Quality and Patient Safety*, 38(11), 516–526. [https://doi.org/10.1016/S1553-7250\(12\)38069-0](https://doi.org/10.1016/S1553-7250(12)38069-0)
- Runyon, B., Hoefs, J., & Morgan, T. (1988). Ascitic fluid analysis in malignancy-related ascites. *Hepatology*, 8(5), 1104–1109. <https://doi.org/10.1002/hep.1840080521>
- Thomsen, T. W., Shaffer, R. W., White, B., & Setnik, G. S. (2006). Paracentesis. *The New England Journal of Medicine*, 355(19), e21. <https://doi.org/10.1056/NEJMvcm062234>

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DEVELOPMENT CREDITS

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