

## Rationale

- To provide guidance in minimizing the risk of paracentesis.
- Bedside paracentesis is a generally safe procedure, with a 1% complication rate. The most common complication is bleeding. Risk factors for bleeding include obesity, severe thrombocytopenia (platelet count < 25 k/microL), coagulopathy, antiplatelet/anticoagulant medications, and renal dysfunction (GFR < 30 ml/min).
- Bleeding risk can be reduced by 1) identifying at-risk patients prior to paracentesis, 2) avoiding injury to blood vessels in the abdominal wall, and 3) temporarily reversing anticoagulation when appropriate.

## Indications

- **Diagnostic**
  - New-onset ascites.
  - Surveillance for suspected bacterial peritonitis
- **Therapeutic**
  - Relief or prevention of tense ascites.

## Interventional Radiology Referrals

*Paracenteses can usually be performed safely at the bedside. Consider referral to Interventional Radiology for the following.*

- If the abdominal wall is too thick (e.g.  $\geq 5$  cm).
- If the fluid collection is too small (e.g.  $\leq 3$  cm in diameter).

## Laboratory Testing

- For outpatients: Review the most recent CBC with platelet count and INR performed within 30 days of the procedure. If the most recent lab results are > 30 days or if there is concern for thrombocytopenia or coagulopathy, then new labs should be obtained.
- For inpatients: Obtain and review CBC with platelet count and INR within 24 hours prior to paracentesis.
- Peritoneal fluid analysis should include cell count with differential, albumin, and total protein.
- If ascitic fluid infection (bacterial/fungal peritonitis) is suspected, then culture ascitic fluid at the bedside in aerobic and anaerobic blood culture bottles *prior* to initiation of antibiotics. Bacterial/fungal peritonitis is unlikely in patients with minimal ascites.

## Management

- **Pre-procedure considerations**
  - Use ultrasound to identify the ascites and to guide marking of the entry site in all patients. If available, use Doppler to avoid abdominal wall blood vessels. Do not change patient position after marking. Paracentesis may be done at the bedside by providers who have met the competency requirements of their Departments (e.g. Internal Medicine, Emergency Medicine).
  - Avoid large volume paracentesis in patients who are at risk for hypotension. Provider judgement guides the volume of fluid removed.
- **Anticoagulant medication management**
  - Consider the risks and benefits of holding antiplatelet/anticoagulation medication (see [Preoperative Testing and Medication Management](#) guideline for anticoagulation/antiplatelet recommended hold times).
  - Consult with appropriate specialists for help assessing the risks of holding anticoagulant medication in patients at high risk for thrombotic complications (e.g. those with mechanical heart valves, arterial stents, or recent pathologic thrombosis).
  - Use Doppler ultrasound to avoid injuring blood vessels in patients at increased bleeding risk (e.g., those taking antiplatelet/anticoagulant medication).
- **Blood product administration**
  - Routine administration of blood products is not recommended.
  - Administration of platelets or fresh frozen plasma/vitamin K, is recommended in the following scenarios.
    - Platelet count < 25 k/microL
    - INR > 3 due to End Stage Liver Disease
    - INR > 2 for patients on warfarin
- **Post-procedure monitoring**
  - Monitor vital signs of inpatients every 2 hours x 3 per order set.
  - Recheck hemoglobin within 6 hours in high risk or if there are concerns for complications.
- Albumin should be administered intravenously after large volume paracentesis (> 5 liters of fluid removed). Please see [Diagnosis and Management of Hepatorenal Syndrome](#) for more information.

## References

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- De Gottardi A, Thevenot T, Spahr L, et al. Risk of complications after abdominal paracentesis in cirrhotic patients: A prospective study. *Clinical Gastroenterology and Hepatology* 2009;7:906–909
- Runyon B, Introduction to the revised American association for the study of liver diseases practice guideline management of adult patients with ascites due to cirrhosis 2012. *Hepatology* 2013;4:1651-1653
- Runyon B, Management of adult patients with ascites due to cirrhosis: Update 2012. *Hepatology* 2013;1-27

## Quality Measures

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- The number of inpatients with CBC with platelet count/INR completed within 24 hours before paracentesis
- Order set usage
- Reports of complications with paracentesis

## Related Guidelines

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- [Warfarin: Management of Elevated INR and Reversal](#)
- [Unfractionated Heparin \(UFH\) and Low Molecular Weight Heparin \(LMWH\) Reversal](#)
- [Rivaroxaban \(Xarelto®\), Apixaban \(Eliquis®\), Edoxaban \(Savaysa®\): Factor Xa Inhibitors — Reversal Treatment for Bleeding](#)
- [Dabigatran \(Pradaxa®\) Reversal Treatment for Bleeding Events](#)
- [Diagnosis and Management of Hepatorenal Syndrome](#)

## Order Sets

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- Post-Paracentesis (pending)

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## Guideline Approved

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*Disclaimer: Clinical practice guidelines and algorithms at The Ohio State University Wexner Medical Center (OSUWMC) are standards that are intended to provide general guidance to clinicians. Patient choice and clinician judgment must remain central to the selection of diagnostic tests and therapy. OSUWMC's guidelines and algorithms are reviewed periodically for consistency with new evidence; however, new developments may not be represented.*

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