

**Project Title:** One Stop Care for Paracentesis

**Project Background:** Albumin administration is recommended after large volume paracentesis to reduce circulatory dysfunction, thereby reducing morbidity and mortality (Bernardi et al., 2012). Outpatient paracentesis patients that needed to receive albumin infusion post paracentesis had to make two outpatient appointments and visit two ambulatory locations, Imaging for the paracentesis and Wound and Infusion Care for the albumin administration. Key stakeholders in both ambulatory settings identified the benefits for streamlining this process so that patients could have one check in and complete both their paracentesis and albumin infusion in just the Imaging ambulatory setting. Patients can begin to receive their albumin infusion as soon as they reach their paracentesis volume criteria.

**Project Purpose:** Imaging nurses set an aim to improve patient satisfaction and patient safety by combining both processes into one outpatient appointment.

**Methods:** To achieve improved patient satisfaction, the objective was to shorten appointment time by providing both procedures in the Imaging Department with one appointment. This eliminates the need to make multiple appointments with wait times in between. To improve patient safety, having the albumin replaced in imaging would improve patient safety by eliminating the number of patients who did not want to wait to be readmitted to the second setting and therefore did not adhere to receive the albumin replacement. Work groups with representation from pharmacy, EPIC analysts, scheduling team, imaging nurses, imaging leadership, and project management used Visio to map out the new process. Extensive work was done to ensure a seamless process, communicate with providers and patients and educate imaging clinical nurses to the administration of the albumin.

**Results:** The baseline data prior to implementation was a no show/cancellation rate of 46% for albumin infusion. Three months post go live, only one patient refused albumin infusion.

**Discussion/Conclusions and Implications for Practice:** This project has saved patients an average an hour or more per appointment. More impressively, it has closed the gap of non-adherence to recommended treatment by ensuring patients who meet the criteria for albumin replacement, receive that evidence-based care.

**Implications for Practice:** This project demonstrates the value of removing waste from a process to ensure patients receive recommended care for optimal clinical outcomes. From the patient's perspective, imaging staff have received many positive comments from patients who previously experienced the two-department process, how happy they now are with a singular appointment in the Imaging Department.

**Date:** 8/8/24

**Evidence Table for:** Paracentesis and Albumin Therapy



- red
- yellow
- green

**Project Lead:** Miranda & Amy

**Reviewer Name:** Ann

**PICO or PS Question:**

Would a one stop treatment plan work for outpatients coming to SH imaging for paracentesis who also require albumin administration?

EBP Andon (check one)

**Summary of evidence review and implications for practice:**

1. Out-patient care teams can design a safe cost-effective center for both fluid removal (paracentesis) and fluid administration (albumin) for patients with acute/chronic liver disease.
2. Sometimes Guidance is useful, however Guidelines can be agreed upon, as experts review past research and conduct new research based upon the best evidence over time. The difficulty of paracentesis patient research is that there are varied clinical conditions where treatment is required: bacterial infection (septic shock), acute and chronic liver disease, and hepatorenal differentiation.
3. There is support for albumin administration for large volume paracentesis, yet we lack specifics of dose, frequency and measurement of successful outcomes. Cost and episodic shortages of Albumin add to the challenges of consistency.
4. Salem Health would benefit from these items if they are not already available: 1) order sets 2) published clear indications 3) standard work

Review of Lit: Paul Howard & Ann Alway

**Article Name:** Albumin Infusion in Patients Undergoing Large-Volume Paracentesis: A Meta-Analysis of Randomized Trials  
**Author & Year:** Bernardi M, Caraceni P, Navickis RJ, and Wilkes MM, 2012  
**Publication name (& PMID if known):** Hepatology 55:1172-1181; DOI 10.1002/hep.24786 HEPATOLOGY, Vol. 55, No. 4, 2012

Design Type	Population Studied & Sample Size (n)	Primary Outcome Measure(s)/Results	Evidence Level
Meta Analysis	17 Trials N= 1225 patients	Compared with alternative treatments, albumin reduced the incidence of post paracentesis circulatory dysfunction. Significant reductions in complications by albumin were also shown in subgroup analysis vs each of the other volume expanders test. The occurrence of hyponatremia was also decreased by albumin, compared with alternative treatment. Finally, mortality is lower among patients with tense ascites undergoing large-volume paracentesis	Level 1 Quality A

**Discussion:**

**Article's Main Conclusions:** Albumin is safe in fact desirable in the treatment plan for ascites.

**Article's Main Limitations:** 12 years old, yet a classic in the literature, found more current publications by this author

**Reader Comments:** Excellent writing, solid research techniques and reporting via tables

**Implications for Practice at Salem Health:** History shows that paracentesis patients have fewer complications and decreased mortality when Albumin is added to their treatments.

**Article Name:** Use of albumin infusion for cirrhosis-related complications: An international position statement.  
**Author & Year:** Bai Z, Mendez-Sanchez N, Romeiro FG, Mancuso A, Philips CA, Tacke F, Basaranoglu M, 2023  
**Publication name (& PMID if known):** JHEP Reports 2023; 10.1016/j.jhepr.2023.100785  
**JHEP Reports 2023.** <https://doi.org/10.1016/j.jhepr.2023.100785>

Design Type	Population Studied & Sample Size (n)	Primary Outcome Measure(s)/Results	Evidence Level
Delphi consensus	33 investigators (experts) 19 countries	International Special Interest Group position statement on the use of Human Albumin (HA) for treatment of liver cirrhosis-related complications. 12 position statements proposed. Short term infusion of HA recommended for management of large volume paracentesis, hepatorenal syndrome, spontaneous bacterial peritonitis	Level V Quality A

**Discussion:**

**Article's Main Conclusions:** Benefits of HA for cirrhosis-related complications are promising. Budget, setting and logistics need to be resolved.

**Article's Main Limitations:** Optimal timing, (Initiation/Duration) and infusion strategy are not yet perfectly clear

**Reader Comments:** Well written, good tables, very similar work to Biggins, incidentally author Bernardi cited often

**Implications for Practice at Salem Health:** Support for Imaging Nurses and Multidisciplinary Team to conduct research and share results with other community hospitals.

**Article Name:** Diagnosis, Evaluation, and Management of Ascites, Spontaneous Bacterial Peritonitis and Hepatorenal Syndrome: 2021 Practice Guidance by the American Association for the Study of Liver Disease  
**Author & Year:** Biggins, SW, Angeli P, Garcia-Tsao G, Gines Pk Ling SC, Nadim MK, Wong F, Kim WR, 2021  
**Publication name (& PMID if known):** Hepatology 74(2); DOI 1014-1048 10.1002/hep.31884

Design Type	Population Studied & Sample Size (n)	Primary Outcome Measure(s)/Results	Evidence Level
Guidance vs Guidelines	Literature review by expert providers	35 pages: This guideline replaced the AASLD published in 2012 by	Level IV Quality A

**Discussion:**

**Article's Main Conclusions:** Data based treatment plans

**Article's Main Limitations:** Disease variables are difficult to study, measure and predict

**Reader Comments:** Still the Tables and charts assist the reader to explore several health conditions. Ascites, Hepatic Renal Disease, Infections/Peritonitis—This article published 2021, The Bai et al article with similar content was published 2023.

**Implications for Practice at Salem Health:** Improved understanding about disease and response to treatment.

**Article Name:** Albumin Infusion in Patients Undergoing Large-Volume Paracentesis: A Meta-Analysis of Randomized Trials  
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**Implications for Practice at Salem Health:** History shows that paracentesis patients have fewer complications and decreased mortality when Albumin is added to their treatments.

**Article Name:** Albumin Administration is Efficacious in the Management of Patients with Cirrhosis: A Systematic Review of the Literature  
**Author & Year:** Zaccherini G, Tufoni M, & Bernardi M; 2020  
**Publication name (& PMID if known):** Hepatic Medicine: Evidence and Research 153-173; DOI 10.2147/HMER.S264231.

Design Type	Population Studied & Sample Size (n)	Primary Outcome Measure(s)/Results	Evidence Level
Systematic Review	45 RCT 10 Meta-analyses	Albumin treatments are more effective than vasopressors following paracentesis. Long term Albumin therapy reduces the need for hospitalization and occurrences of complications.	Level II Quality A

**Discussion:**

**Article's Main Conclusions:** Albumin therapy can reduce the need for hospitalization, in addition Albumin can reduce complications that arise with cirrhosis

**Article's Main Limitations:** 2020 publication reviewed studies from 1987-2018

**Reader Comments:** Nicely reported including risk of bias in studies

**Implications for Practice at Salem Health:** Seek assistance for observations of and reporting current patient population and long-term outcomes. Need current studies in the last few years and right now.

**Article Name:** Position Statement on use of Albumin in Liver Cirrhosis  
**Author & Year:** Castro-Narro G, Moctezuma-Valazquez C, Male-Velazquez R. et al. 2022  
**Publication name (& PMID if known):** Annals of Hepatology 27; DOI 10.1016/j.aohp.2022.100708  
**JHEP Reports 2023.** <https://doi.org/10.1016/j.jhepr.2023.100785>

Design Type	Population Studied & Sample Size (n)	Primary Outcome Measure(s)/Results	Evidence Level
Position Statement	Several citations, shared studies and viewpoints	Discussed Cirrhosis, the disease progression and why Albumin works in compensation and uncompensated liver disease. Providers began using Albumin for liver disease about 70 years ago.	Level IV Quality A

**Discussion:**

**Article's Main Conclusions:** Knowledge of biology of cirrhosis complications has increased over the years. Scientists now know why Albumin works in this situation. Albumin continues to show promise in reducing complications and decreasing mortality.

**Article's Main Limitations:** admittedly we know less about using Albumin in the setting of kidney failure

**Reader Comments:** well organized into recommendations endorsed by professional organizations

**Implications for Practice at Salem Health:** Studies are needed to point out exactly which patients benefit from Albumin therapy. More details about dose and frequency would be helpful.

**Article Name:** Albumin for cirrhosis-related complications

**Author, Year:** Erstad BL, 2021

**Publication name (& PMID if known):** Journal of Clinical Pharmacy and Therapeutics, J Clin Pharm Ther. 46:887-894; DOI 10.1111/jcpt.13461

<b>Design Type</b>	<b>Population Studied &amp; Sample Size (n)</b>	<b>Primary Outcome Measure(s)/Results</b>	<b>Evidence Level</b>
Review of the Literature	Studies Reviewed	Purpose: discuss the limitations of the studies serving as the evidence for recommendations in clinical practice guidelines concerning albumin use for cirrhosis-related complications, review relevant studies published since the guidelines and suggest directions for future investigations.	Level V Quality A

**Discussion:**

**Article's Main Conclusions:** Evidence for albumin administration in the setting of large volume paracentesis is 20 years old. We would benefit from future studies evaluating long term Albumin administration for patients with decompensated cirrhosis. Need studies with larger samples given the high cost and shortage of albumin.

**Article's Main Limitations:** Critical of history and present approaches due to inconsistency

**Reader Comments:** nicely organized by disease process

**Implications for Practice at Salem Health:** Salem Health could fill in a gap or two with a simple observations/descriptive study on who the patients are, what are we treating and how the patients in imaging are doing. Author recommends: 1)order sets 2)clear indications 3)standardizing approaches