VUMC Multidisciplinary Surgical Critical Care Service

Guidelines for Albumin Administration

Purpose: To provide guidance for prescribing albumin in the Surgical Intensive Care Unit (SICU).

Background: Even though there is limited evidence to support the use of albumin in critically-ill patients, it is routinely used by practitioners for a variety of indications. One commonly used indication is for diuresis with loop diuretics. The evidence that supports this use was studied in very specific patient populations (e.g. nephrotic syndrome, cirrhosis, acute lung injury, and hypoproteinemic patients) and should not be applied to all ICU patients.[5,6,7] In regards to resuscitation, The Surviving Sepsis Campaign Guidelines recommend crystalloids as the initial fluid of choice in the resuscitation of severe sepsis and septic shock.[2] A recent Cochrane review found no evidence that resuscitation with colloids reduces the risk of death compared to resuscitation with crystalloids.[4] Due to the cost and lack of evidence showing benefit with albumin for most indications, albumin use should be limited.

Cost Comparison:

	Hospital Cost
Normal Saline 1000mL	$1.18
D5LR 1000mL	$1.11
Plasmalyte	$2.12
Albumin 5% 250mL (12.5g)	$35.32
Albumin 25% 100mL (25g)	$70.63

Approved Indications:

1. Diuresis
   *Must meet **all** of the following requirements:*
   a. Patients have failed diuretic therapy and have acute severe peripheral/pulmonary edema
   b. Serum albumin ≤ 3.0 g/dL
   c. Adequate nutrition source such as enteral feeds or TPN
   d. Respiratory insufficiency
2. Large-Volume Paracentesis ≥ 4 liters
   a. May use 6 to 8 grams of albumin for each liter of ascetic fluid removed (round to the closest vial size)
3. Liver Transplant/Hepatic Resection
   a. Albumin may be used to maintain effective circulating volume following major hepatic resection (greater than 40%)
   b. Post-operative liver transplant patients may be given albumin for resuscitation if they have signs of hypervolemia and have failed/contraindication to crystalloid therapy
4. Plasmapheresis
   - Albumin in large volume plasma exchange (>20 mL/kg) is appropriate

NOT approved Indications:

1. Resuscitation
    a. Crystalloids are the preferred agent.

Contraindications:

- Resuscitation of patients with Traumatic Brian Injury (TBI)[1]

References:

1. The SAFE study investigators. Saline or albumin for fluid resuscitation in patients with traumatic brain injury. N Engl J Med 2007;357:874-84.
2. Surviving Sepsis Campaign: International Guidelines for Management of Severe Sepsis and Septic Shock: 2012. Crit Care Med 2013;41(2):580-637.
3. Guidelines for Use of Albumin: University Health Consortium. Archives of Internal Med 1995;155.
4. Perel P, Roberts I, Ker K. Colloids versus crystalloids for fluid resuscitation in critically ill patients. Cochrane Database of Systematic Reviews 2013, Issue 2. Art. No.: CD000567. DOI: 10.1002/14651858.CD000567.pub6.
5. Martin GS, et al. A randomized, controlled trial of furosemide with or without albumin in hypoproteinemic patients with acute lung injury. Crit Care Med 2005;33(8):1681-1687.
6. Martin GS, Mangialardi RJ, Wheeler AP, et al. Albumin and furosemide therapy in hypoproteinemic patients with acute lung injury. Crit Care Med 2002; 30:2175–2182.
7. Elwell RJ, Spencer AP, Eisele G. Combined furosemide and human albumin treatment for diuretic-resistant edema. Ann Pharmacother 2003;37:695-700.

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