

**VANDERBILT UNIVERSITY MEDICAL CENTER
MULTIDISCIPLINARY BURN CRITICAL CARE**

ALBUMIN PROTOCOL FOR THE BURN CENTER

Burn shock is characterized by the loss of fluid into burned tissues within the first 8 hours post burn injury and then a further loss of fluid after 24 hours into non-burned tissues. The resuscitation of burn patients with >20% TBSA should follow the Parkland formula. This may need to be modified during the course of resuscitation depending on the clinical progress of the patient.

Where there is concern that the patient is requiring significantly more crystalloid than expected the guidelines below may be utilized:

- 1) Albumin use during the first 8 hours of burn resuscitation is rarely necessary.

- 2) The need for albumin is considered a surrogate for severity of injury and the patient should be reassessed for
 - a. TBSA % reassessed and be re-evaluated for the development of compartment syndrome that may require escharotomy
 - b. Significant inhalational injury as they may require more fluid than predicted by the Parkland formula. In these circumstances, a higher crystalloid replacement rate should be attempted prior to considering albumin.

- 3) The use of albumin may be considered when there is concern for under-resuscitation in the following situation:
 - a. If beyond 8 hours from the time of burn injury the Parkland resuscitation is at a rate of 6ml/kg/hr or greater

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- 4) If Albumin is indicated
 - a. The albumin volume should be considered as a proportion of the hourly fluid administration rate
 - b. Fluids (crystalloid and albumin) should continue to be decreased according to urine output goals
 - c. If the total rate of hourly fluid administration returns to 4ml/kg/hr, albumin administration should be discontinued
 - d. The use of albumin should continue ideally no longer than 24 hours from the time of initial burn injury

- 5) Albumin infusion is the preferred mode of administration but boluses may be used if deemed appropriate

- 6) If Albumin bolus is indicated
 - a. A bolus of 250ml of 5% albumin should be given. Often one or two boluses are enough to increase urine output and allow downward titration of crystalloid. If this proves unsuccessful then further consideration should be given to
 - i. Albumin at a baseline rate as determined by the clinician caring for the patient and clinical progress monitored (*5% or 25% albumin preparations*)
 - OR**
 - ii. Albumin at a rate 1/3 of the current hourly infusion rate (*5% albumin preparation only*). This may require the use of a large amount of albumin!

- 7) When albumin has been started then this should be an indicator that the patient is at risk for secondary complications from resuscitation including abdominal compartment syndrome. Consideration should be given to
 - a. Placement of central access if not already done
 - b. Assessment of cardiac function by either non-invasive or invasive means
 - c. Monitoring of abdominal compartment pressures q4hrly

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8) The cost of albumin

- a. 250ml/5% albumin is \$35 i.e. 25gm of 5% albumin is \$35
- b. 100ml of 25% albumin is \$280 i.e. 25gm of 25% albumin is \$70

References

1. Cooper AB, Cohn SM, Zhang HS, et al. Five percent albumin for adult burn shock resuscitation: lack of effect on daily multiple organ dysfunction score. Transfusion 2006;46:80-9.
2. Faraklas I, Cochran A, Saffle J. Review of a fluid resuscitation protocol: "fluid creep" is not due to nursing error. J Burn Care Res 2012;33:74-83.
3. Melinyshyn A, Callum J, Jeschke MC, Cartotto R. Albumin supplementation for hypoalbuminemia following burns: unnecessary and costly! J Burn Care Res 2013;34:8-17.
4. Lawrence A, Faraklas I, Watkins H, et al. Colloid administration normalizes resuscitation ratio and ameliorates "fluid creep". J Burn Care Res 2010;31:40-7.
5. Saffle JI. The phenomenon of "fluid creep" in acute burn resuscitation. J Burn Care Res 2007;28:382-95.