



Assessing the Impact of Fluid Volumes and Fluid Composition in Relation to Sepsis Related Outcomes In ICU Patients

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BACKGROUND

Sepsis is the leading cause of mortality, long-term mortality and healthcare costs worldwide.^{1,2,3} The 2016 Surviving Sepsis Campaign recommend giving 30 mL/kg of crystalloid fluid, however, do not advocate for fluid choice or make recommendations for maintenance fluids after the fluid bolus.

In the SMART trial, patients receiving balanced solutions (lactated Ringer's or Plasma-Lyte A) had less major adverse kidney events at 30 days than patients who received saline (0.9% sodium chloride), with no difference in mortality.^{4,5} In an analysis of the sepsis subset of the patient population, patients receiving balanced solutions had a lower incidence of the composite outcome of death and new renal dysfunction compared to patients receiving saline solutions. A secondary analysis of the trial showed decreased mortality at 30 days in the balanced solutions group compared to the saline group.

Corl et al. examined whether restrictive fluid administration versus standard of care affected mortality, ICU length of stay, and electrolyte abnormalities.⁶ No differences were found in any outcome between the restrictive group (less than 60 mL/kg over 72 hours) and standard of care (no fluid restriction).

OBJECTIVE

To determine the effects of fluid choice and volume on in hospital mortality in patients diagnosed with sepsis or septic shock.

METHODS

The study includes all patients with the diagnosis of sepsis, severe sepsis or septic shock, admitted to University Medical Center intensive care units directly from the emergency department from September 1, 2017 to August 31, 2019.

Inclusion criteria:

- Age 18-89, patients presenting to the ER and admitted directly from ER to ICU, and sepsis/severe sepsis/septic shock diagnosis

Exclusion criteria:

- Patients admitted from outside inpatient facilities, patients with hospital onset sepsis, and hospice designation within 24 hours

Data collection:

- Baseline characteristics: age, race, sex, height, weight, infectious source, unit of admission
- Outcomes: resuscitation fluid selection, resuscitation fluid amount administered, maintenance fluid selection, maintenance fluid amount administered (hours 0-6, 6-12, 12-24, 24-48, 48-72), need for new renal replacement therapy during admission, final serum creatinine >200% of baseline, use of vasopressors, duration of vasopressor use, mortality during admission, hospital length of stay, ICU length of stay, fluid balance (hours 0-6, 6-12, 12-24, 24-48, 48-72), serum creatinine levels (admission, day 1, 2, 3), serum chloride levels (admission, day 1, 2, 3), serum bicarbonate levels (admission, day 1, 2, 3), presence of baseline heart failure, and presence of baseline chronic kidney disease
- Covariates: APACHE II score, Charleston Comorbidity Index, and SOFA score

CONCLUSIONS

1. Pending

LIMITATIONS

1. Retrospective chart review

2. Information dependent on accurate charting for fluid balance

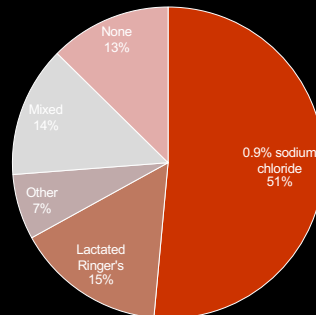
3. Physician clinical judgement as diagnosis for sepsis or septic shock

SELECTED REFERENCES

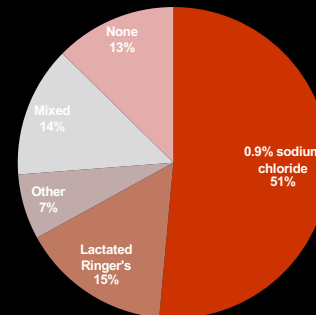
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RESULTS

Resuscitation Fluid Selection (n=103)



Maintenance Fluid Selection (n=103)



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