



### Background

- By the Surviving Sepsis Campaign guidelines, fluid resuscitation is an essential component for the initial management of patients with sepsis<sup>1</sup>.
- 0.9% Sodium Chloride (NaCl) is most commonly used crystalloid for resuscitation in the United States<sup>2</sup>.
- Since the chloride concentration is higher in 0.9% NaCl compared to human plasma, there have been concerns with increased incidence of hyperchloremic metabolic acidosis, acute kidney injury, and death<sup>3</sup>.
- Other considerations for fluid resuscitation include balanced crystalloids such as Normo-sol and lactated Ringer's which are closer in physiology to human plasma.
- Several studies in recent years have evaluated the use of these crystalloids demonstrating benefit with balanced crystalloids in fluid resuscitation.

### Objective

- To evaluate the usage and prescribing patterns of fluid resuscitation of lactated Ringer's and 0.9% sodium chloride in patients with sepsis at our institution.

### Methods

#### Inclusion Criteria:

- All patients admitted to our institution that had a confirmed diagnosis of sepsis at any point in their admission and had the Sepsis Order Set included on their Medication Administration Record.
- Diagnosis confirmation was based on the hospital's sepsis criteria.

#### Exclusion Criteria:

- Patients transferred out of our institution with unresolved sepsis or septic shock.
- Patients with end-stage renal disease
- Patients less than 18 years of age
- Patients that received colloids for initial fluid resuscitation
- Pregnant patients
- Prisoners

### Results

Table 1

| Patient Demographics N= 143                    |                              |
|--|------------------------------|
| Patient Sex                                    | Male: 58.7%<br>Female: 41.3% |
| Median Age (yr) (IQR)                          | 70 (25-96)                   |
| Median Baseline Serum Creatinine (mg/dL) (IQR) | 1.1 (0.24 – 7.87)            |

#### Intravenous Crystalloids Ordered N= 143

Figure 1

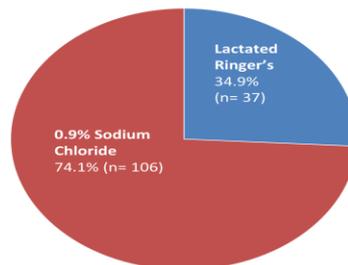


Table 2

| Dialysis Need by Crystalloid Use |                        |
|----------------------------------|------------------------|
| Crystalloid                      | Percentage of Patients |
| 0.9% Sodium Chloride             | 6.6% (7/106)           |
| Lactated Ringer's                | 2.7% (1/37)            |

### Discussion and Conclusions

- From January 1, 2020 to March 31, 2020, a total of 143 patients met criteria for analysis.
- Patients were most commonly excluded for two reasons: Receiving both crystalloids or no documentation of fluid resuscitation.
- In this study, 74.1% of patients received 0.9% NaCl for fluid resuscitation, while 34.9% of patients received lactated Ringer's.
- 6.6% of patients that received 0.9% NaCl required dialysis compared to 2.7% of patients that received lactated Ringer's.
- Limitations of this study:
  - Retrospective study design: difficulty in controlling confounding variables such as preexisting kidney disease and other related comorbidities.
  - Inability to assess the correlation of crystalloid use to need for dialysis.
  - Inconsistent prescribing styles between physicians.
- Overall, the results from this study have demonstrated that 0.9% NaCl remains the more commonly prescribed crystalloid for fluid resuscitation compared to lactated Ringer's in patients with sepsis at our institution.
- The impact of including lactated Ringer's to the current Sepsis Order Set will be evaluated in future research.

### Disclosures

Authors of this presentation have the following to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation:

Alexander Aliling and Allison Rosa: nothing to disclose

### Referncese

- Rhodes A, Evans LE, Alhazzani W, et al. Surviving Sepsis Campaign: International Guidelines for Management of Sepsis and Septic Shock: 2016. *Crit Care Med* 2017; 45(3): 486-552.
- Shaw AD, Bagshaw SM, Goldstein SL, et al. Major complications, mortality, and resource utilization after open abdominal surgery: 0.9% saline compared to Plasma-Lyte. *Ann Surg* 2012; 255: 821-829
- Semler MW, Self WH, Wanderer JP, et al. Balanced crystalloids versus saline in critically ill adults. *N Engl J Med* 2018; 378: 829-839.