Background

- By the Surviving Sepsis Campaign guidelines, fluid resuscitation is an essential component for the initial management of patients with sepsis.1
- 0.9% Sodium Chloride (NaCl) is most commonly used crystalloid for resuscitation in the United States.2
- 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.3
- 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

<table>
<thead>
<tr>
<th>Patient Demographics N= 143</th>
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<tbody>
<tr>
<td>Patient Sex</td>
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<tr>
<td>Male: 58.7%</td>
</tr>
<tr>
<td>Female: 41.3%</td>
</tr>
<tr>
<td>Median Age (yr) (IQR)</td>
</tr>
<tr>
<td>70 (25-96)</td>
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<tr>
<td>Median Baseline Serum Creatinine (mg/dL) (IQR)</td>
</tr>
<tr>
<td>1.1 (0.24 – 7.87)</td>
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Table 2

<table>
<thead>
<tr>
<th>Crystalloid</th>
<th>Percentage of Patients</th>
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<tr>
<td>0.9% Sodium Chloride</td>
<td>6.6% (7/106)</td>
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<tr>
<td>Lactated Ringer’s</td>
<td>2.7% (1/37)</td>
</tr>
</tbody>
</table>

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 Ailing and Allison Rosa: nothing to disclose

References