BACKGROUND

• Intravenous fluids (IVFs) are routinely administered in the intensive care unit (ICU).  
• This includes hidden fluids, which are defined as fluids requisite to routine care, but the volumes of which are not explicitly prescribed (e.g., medication diluents, flushes).  
• Improper administration of IVFs can lead to volume overload, which is associated with organ dysfunction and mortality.  
• With the overwhelming number of patients in the ICU with coronavirus disease 2019 (COVID-19), proper management of fluids is crucial to minimize the risks of acute respiratory distress syndrome and fluid overload.  

PURPOSE

Identify pharmacy recommendations related to hidden fluids in the treatment of critically ill patients with COVID-19

OUTCOMES

Primary
• Percentage of pharmacy recommendations related to hidden fluids

Secondary
• Classification of hidden fluids recommendations according to the following:  
  • Conversion of medications from IV to non-IV route  
  • Adjust dose of enteral fluid  
  • Discontinue enteral water  
  • Adjust volume of parenteral nutrition  
  • Change albumin concentration  
  • Concentrate infusions of sodium bicarbonate, vasopressors, or antibiotics

STUDY DESIGN

• Design: IRB-approved, single-center, retrospective cohort  
• Time Frame: May 2020 through September 2020  
• Setting: 450-bed community teaching hospital  
• Inclusion Criteria:  
  • Critically ill adults admitted to the ICU with COVID-19  
  • Followed by academic rounding team  
  • Recommendations documented in TheraDoc®  
• Methods: Recommendations were assessed for relevance to fluid stewardship and hidden fluids  
• Statistical Plan:  
  • Descriptive statistics were used to report outcomes

RESULTS

Table 1. Classification of Hidden Fluids Recommendations (n=85)

<table>
<thead>
<tr>
<th>Intervention</th>
<th>n</th>
<th># per patient day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conversion of medications from IV to non-IV route</td>
<td>59</td>
<td>0.143</td>
</tr>
<tr>
<td>Adjust dose of enteral fluid</td>
<td>16</td>
<td>0.038</td>
</tr>
<tr>
<td>Discontinue enteral water</td>
<td>6</td>
<td>0.014</td>
</tr>
<tr>
<td>Adjust volume of parenteral nutrition</td>
<td>2</td>
<td>0.005</td>
</tr>
<tr>
<td>Change albumin concentration</td>
<td>1</td>
<td>0.002</td>
</tr>
<tr>
<td>Concentrate infusions of sodium bicarbonate, vasopressors, or antibiotics</td>
<td>1</td>
<td>0.002</td>
</tr>
</tbody>
</table>

*Classifications established by investigators a priori

CONCLUSIONS

• Roughly 1 in 8 pharmacy recommendations were related to fluid stewardship, and nearly half of those were related to hidden fluids  
• The most common hidden fluids recommendation involved converting medications from IV to non-IV route.  
• Pharmacists play a role in minimizing the volume of this oftentimes unrecognized hidden fluids.

Limitations
• Single center, retrospective design  
• Potential for inaccurate classification of recommendations by reviewers

Future Direction
• Compare hidden fluids recommendations in critically ill patients with and without COVID-19

REFERENCES