



# Acceptance Rate of Pharmacist Driven Fluid Stewardship Recommendations in Critically Ill Adults with and without COVID-19

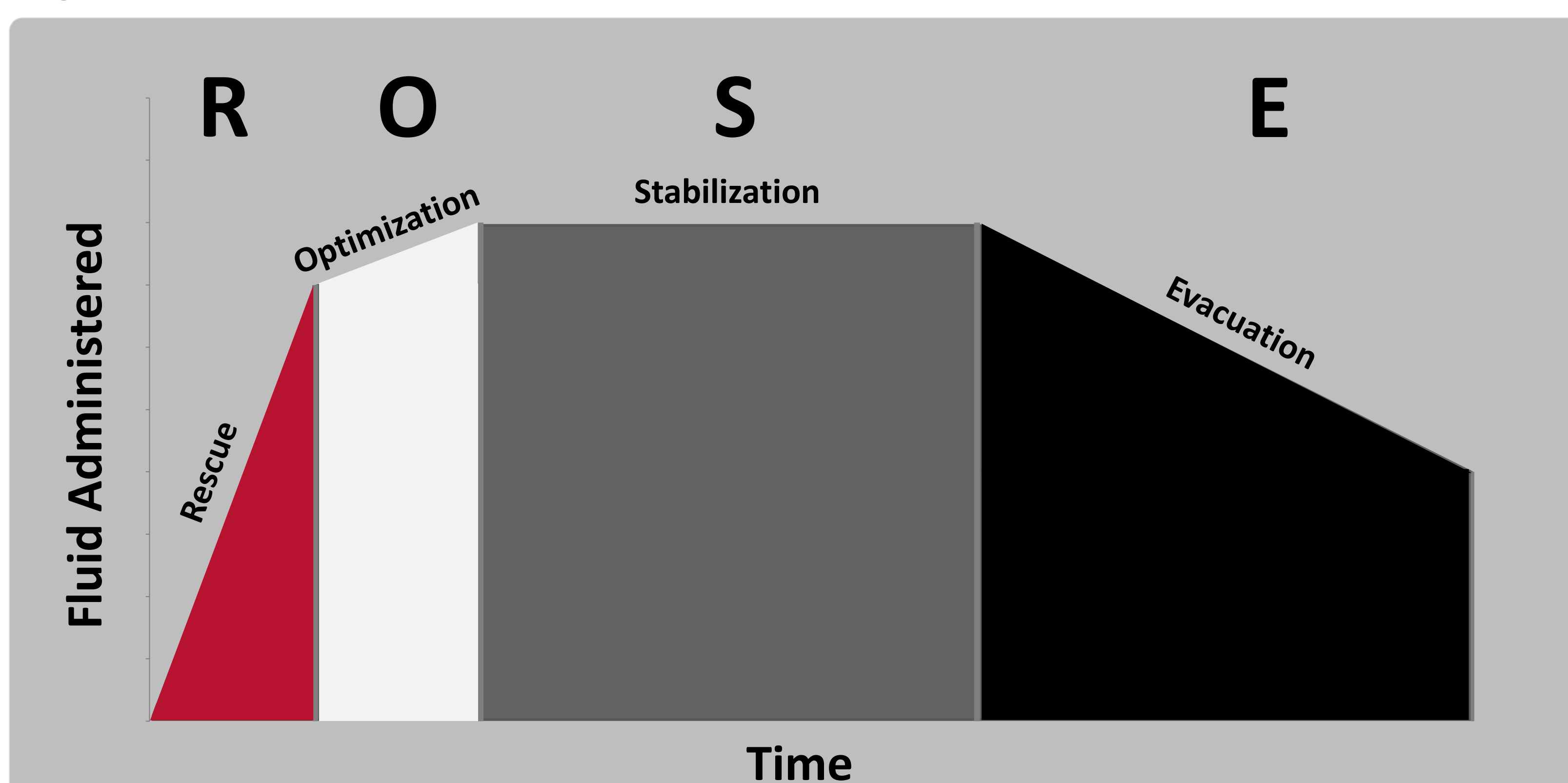
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## BACKGROUND

- Intravenous fluids (IVFs) are frequently administered in the intensive care unit (ICU) to maintain organ perfusion and hemodynamic stability.
- During the last year, majority of patients in the ICU were diagnosed with coronavirus disease 2019 (COVID-19).
- Inappropriate use of IVFs in ICU patients can negatively impact outcomes.
- Fluid stewardship plays an essential part in optimizing patient care by promoting medication safety.
- With the expanding role of a pharmacist that comes with implementing fluid stewardship, the proportion of pharmacist recommendations accepted by providers has yet to be described.

**Purpose:** To identify the percentage of pharmacy-driven fluid stewardship recommendations that are implemented when treating critically ill adults with and without COVID-19

Figure 1. ROSE Phases of Fluid Administration



## METHODS

- Study Design:** IRB-approved, retrospective, single-center cohort study
- Time Frame:** June 2016 – September 2020
- Setting:** 450-bed community teaching hospital
- Inclusion Criteria:**
  - Adult (≥18 years old)
  - Critically ill
  - Followed on academic rounds
- All pharmacy recommendations for each patient day were reviewed for relevance to fluid stewardship and the electronic medical record (EMR) was evaluated for acceptance of recommendations.
- Comparator Groups:** Patients were divided into categories based on diagnosis of COVID.
- Statistical Analysis:** Chi-squared and Mann-Whitney U tests were used to analyze outcomes. Data were assumed to be non-parametric.

## OUTCOMES

- |   |   |
|---|---|
| <b>Primary</b>  | <b>Secondary</b>  |
| • Acceptance rate of fluid stewardship recommendations between COVID and non-COVID patients | • Acceptance rate of recommendations based on the ROSE phases of fluid administration between both groups |

## INTERVENTION CLASSIFICATIONS

Table 1. Examples of Intervention Classifications based on ROSE Phases

Phase	Interventions
<b>Rescue</b>	<ul style="list-style-type: none"> <li>Initiate or discontinue bolus IVF NOT based on fluid responsiveness</li> </ul>
<b>Optimization</b>	<ul style="list-style-type: none"> <li>Initiate or discontinue bolus IVF based on fluid responsiveness</li> <li>Recommend to assess volume responsiveness</li> <li>Initiate or discontinue albumin</li> <li>Change type of bolus IVF</li> <li>Change the fluid that HCO<sub>3</sub> is diluted in</li> <li>Change albumin concentration</li> <li>Add stop date/time for bolus IVF</li> <li>Concentrate infusions of sodium HCO<sub>3</sub>, vasopressors, or antibiotics</li> </ul>
<b>Stabilization</b>	<ul style="list-style-type: none"> <li>Initiate or discontinue maintenance IVF (mIVF)</li> <li>Initiate or discontinue enteral water</li> <li>Initiate or discontinue parenteral nutrition</li> <li>Change type of maintenance IVF</li> <li>Convert mIVF to enteral fluid or oral diet</li> <li>Convert parenteral nutrition to enteral route</li> <li>Convert route of medication from IV to non-IV route</li> <li>Adjust dose of enteral fluid or mIVF</li> <li>Adjust volume of parenteral nutrition</li> <li>Add stop date/time for mIVF</li> </ul>
<b>Evacuation</b>	<ul style="list-style-type: none"> <li>Initiate or discontinue diuretic</li> <li>Adjust dose or timing of diuretic administration</li> </ul>

## RESULTS

Table 2. Overview of Patient Data By Groups

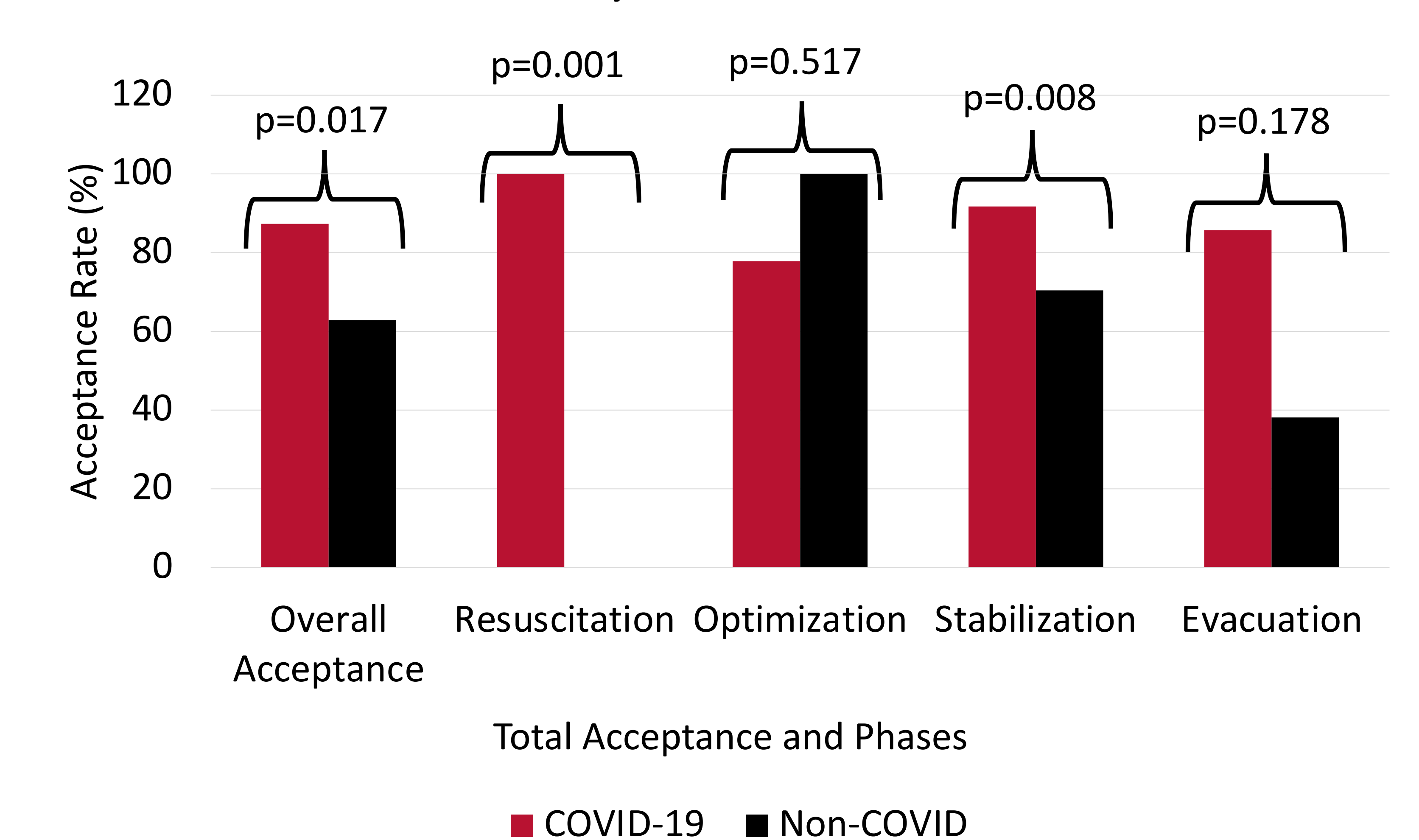
Demographics, n (%)	COVID, n=79	Non-COVID, n=100	P-value
Male	40 (57)	50 (50)	0.36
African American	48 (70.6)	58 (58.6)	0.002
Caucasian	18 (26.5)	38 (38.4)	
Other	2 (2.9)	3 (3)	
Taking Home Diuretics	22 (35.5)	34 (34)	0.85
History of ESRD	4 (6.5)	13 (13)	0.19
History of CHF	7 (11.3)	22 (22)	0.08

## RESULTS CONTINUED

Table 3. Overview of Recommendations

<b>Total Patients</b>	<b>179</b>
Total Patient-days	668
<b>Total Pharmacy Recommendations</b>	<b>2,089</b>
Fluid Stewardship Recommendations	313 (15% of total)
Fluid Stewardship Recommendations Accepted	236 (75%)

Figure 2. Percentage of Recommendations Accepted Overall and Broken Down by ROSE Phases



## CONCLUSIONS

- There was a higher acceptance rate of pharmacist driven fluid stewardship recommendations in critically ill patients with COVID-19.
- The acceptance rate was higher across all phases of the ROSE model in COVID-19 patients except for the optimization phase which had a higher acceptance rate in non-COVID patients.

**Limitations:** Uneven distribution of patient groups; retrospective, single-center design

**Future Direction:** Determine the impact of pharmacist recommendations on patient outcomes

## REFERENCES

Hawkins, W. A., Smith, S. E., Newsome, A. S., Carr, J. R., Bland, C. M., & Branam, T. N. (2019). Fluid Stewardship During Critical Illness: A Call to Action. *Journal of Pharmacy Practice*. <https://doi.org/10.1177/0897190019853979>