



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

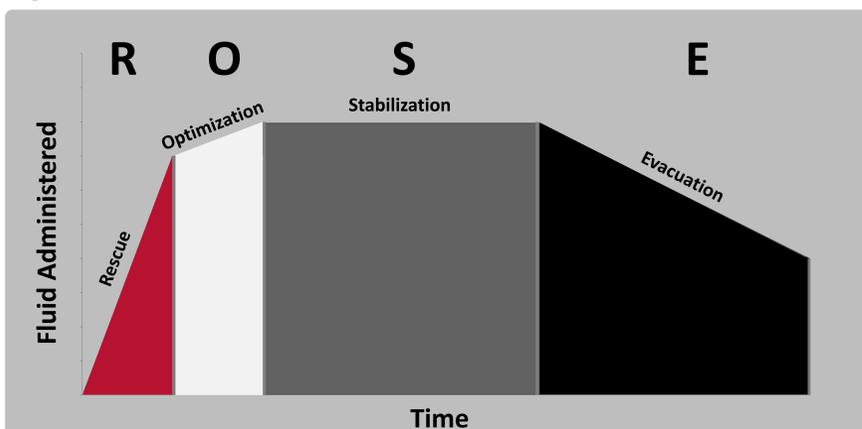
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BACKGROUND

- 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

- | | |
|---|---|
| Primary | Secondary |
| • 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
Rescue	<ul style="list-style-type: none"> Initiate or discontinue bolus IVF NOT based on fluid responsiveness
Optimization	<ul style="list-style-type: none"> Initiate or discontinue bolus IVF based on fluid responsiveness Recommend to assess volume responsiveness Initiate or discontinue albumin Change type of bolus IVF Change the fluid that HCO₃ is diluted in Change albumin concentration Add stop date/time for bolus IVF Concentrate infusions of sodium HCO₃, vasopressors, or antibiotics
Stabilization	<ul style="list-style-type: none"> Initiate or discontinue maintenance IVF (mIVF) Initiate or discontinue enteral water Initiate or discontinue parenteral nutrition Change type of maintenance IVF Convert mIVF to enteral fluid or oral diet Convert parenteral nutrition to enteral route Convert route of medication from IV to non-IV route Adjust dose of enteral fluid or mIVF Adjust volume of parenteral nutrition Add stop date/time for mIVF
Evacuation	<ul style="list-style-type: none"> Initiate or discontinue diuretic Adjust dose or timing of diuretic administration

RESULTS

Table 2. Overview of Patient Data By Groups

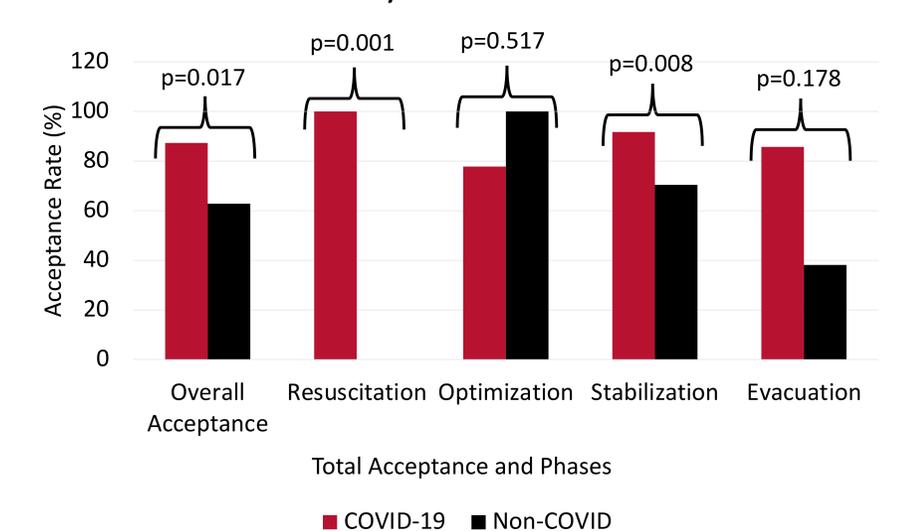
Demographics, n (%)	COVID, n=79	Non-COVID, n=100	P-value
Male	40 (57)	50 (50)	0.36
African American	48 (70.6)	58 (58.6)	0.002
Caucasian	18 (26.5)	38 (38.4)	
Other	2 (2.9)	3 (3)	
Taking Home Diuretics	22 (35.5)	34 (34)	0.85
History of ESRD	4 (6.5)	13 (13)	0.19
History of CHF	7 (11.3)	22 (22)	0.08

RESULTS CONTINUED

Table 3. Overview of Recommendations

Total Patients	179
Total Patient-days	668
Total Pharmacy Recommendations	2,089
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>