Association of Pharmacy-driven fluid stewardship recommendation acceptance rate on outcomes in critically ill adults

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BACKGROUND

- Intravenous fluids (IVFs) comprise a vast majority of medications utilized in the intensive care unit (ICU).
- With the wide use of IVFs, the role of the pharmacist is increasing in enforcing fluid stewardship to ensure safety and effective use in critically ill patients.
- Improper use of IVFs in critically ill patients can lead to worsening patient outcomes.
- The role of pharmacy-driven fluid stewardship recommendation acceptance rate has on outcomes has yet to be discovered.

Purpose: To determine the impact a <70% pharmacy-driven fluid stewardship recommendation acceptance rate has on patient outcomes

METHODS

- **Design:** IRB-approved, retrospective, single-center cohort study
- **Time Frame:** June 2016-September 2020
- **Setting:** Community hospital
- **Inclusion Criteria:** Adult (≥18 years old), critically ill, and 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 reviewed for acceptance of recommendations.
- **Statistics:** Chi-squared test and Mann-Whitney U were used to analyze nominal and continuous data, respectively.

OUTCOMES

- **Primary:** Incidence of fluid overload in patients with high versus low acceptance rate of pharmacy-driven fluid stewardship recommendations
  - Fluid overload is defined as at least a 10% increase in weight from hospital admission to discharge
- **Secondary:** In-hospital mortality and percent weight change between groups

PRELIMINARY RESULTS

Table 1. Overview of Recommendations

Total Patients	**179**
Total Patients-days	668
Total Pharmacy Recommendations	**2,089**
Fluid Stewardship Recommendations	313 (15% of total)
Fluid Stewardship Recommendations per Patient-day	0.47

Table 2. Overall Patient Data

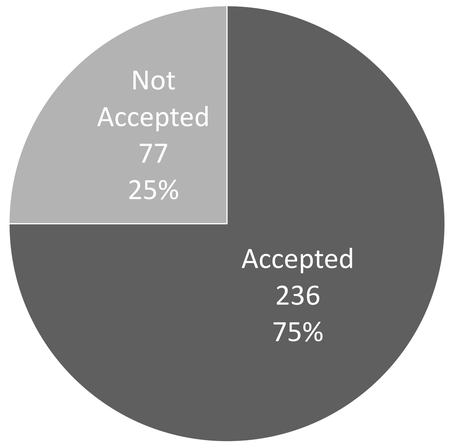
Demographics	
Male	90 (52.9% of fluid)
African American	106 (63.5%)
Caucasian	56 (33.5%)
Other Race	5 (3%)
COVID-19 Admission Diagnosis	79 (44.1%)
History of End Stage Renal Disease	17 (10.5%)
History of Congestive Heart Failure	29 (17.9%)
Taking Home Diuretics	56 (34.6%)
Outcomes	
Mortality	49 (27.4%)
Incidence of Fluid Overload	22 (12.3%)
Mean Number of Mechanical Ventilator-Free Days	16.2 (SD 13)

CONCLUSIONS

- Authors hypothesize that patients with at least a 70% acceptance rate of fluid stewardship recommendations will have lower incidence of fluid overload, percent weight change, and in-hospital mortality.
- Pharmacists play a crucial role in fluid stewardship within the critically ill patient population, and this may have implications on improved patient outcomes.

PRELIMINARY RESULTS (cont.)

Figure 1. Percent of pharmacy-driven fluid stewardship recommendations accepted



FUTURE DIRECTIONS

- Further studies are required to explore the relationship between the COVID-19 diagnosis and fluid stewardship acceptance rates.
- This data showed fluid stewardship recommendations represented more than 1 in 8 pharmacy recommendations in critically ill adults with COVID-19.
- Fluid stewardship is a key intervention that pharmacists can make in the ICU during the COVID-19 pandemic.

LIMITATIONS

- Retrospective data collection
- Single-center design
- Lack of diversity in admission diagnoses

REFERENCES

Hawkins WA, Smith SE, Newsome AS, Carr JR, Bland CM, Branan TN. Fluid Stewardship During Critical Illness: A Call to Action. *J Pharm Pract*. 2020;33(6):863-873. doi:10.1177/0897190019853979