Characterization of medications as a source of fluids in the medical intensive care unit

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INTRODUCTION

• Fluids are among the most common medications used in the intensive care unit (ICU) setting.

• Positive fluid balance in critically ill patients has been associated with increased mortality in the first 72 hours, increased use of renal replacement therapy, increased acute kidney and acute lung injury, and increased duration of mechanical ventilation.

• Positive fluid balance may be secondary to unrecognized or “hidden” sources of fluids such as intravenous (IV) medications.

PURPOSE

The purpose of this study was to characterize medications as a source of fluids in critically ill patients.

METHODS

A retrospective review of electronic medical records of medical ICU patients was conducted.

Patients ≥ 18 years of age and admitted to the ICU for over 72 hours were included.

Patients with a diagnosis of diabetes insipidus or diabetic ketoacidosis or who were pregnant were excluded.

Data collected included patient demographics, milliliters of fluids administered, and types of IV medications administered.

The primary objective of this study was to identify the classes of IV medications contributing the greatest amount of fluids to critically ill patients during the first 72 hours of the ICU admission.

This project is part of the health system medication use evaluation (MUE) and improvement program, which has been reviewed by the Augusta University Institutional Review Board and determined not to be human subject research.

DISCUSSION

• At 72 hours, patients received on average 1,368 mL ± 333 mL of antibiotics, 415 mL ± 188 mL of PAD medications, and 373 mL ± 294 mL of vasoactive agents.

• IV medications are a major contributor to total fluid intake, especially in the first 48 hours.

• The biggest contributors, in order of contribution, were antibiotics, PAD medications, vasoactive agents, and electrolytes.

CLINICAL IMPLICATIONS

• Standardized concentrations of antibiotics, of PAD medications, and vasoactive agents may optimize the amount of fluid received from IV medications in critically ill patients.

• Providers should incorporate IV medications into evaluation of fluid therapy when throughout the different stages of fluid resuscitation (ROSE).

• This study highlights the potential for daily interventions regarding fluid concentration and IV to oral conversions.

NEXT STEPS

• Systematic quality improvement initiatives regarding protocols for standard concentrations should be reviewed in order to reduce total fluid intake from IV medications.

• Further study should be conducted to evaluate the relationship between medication-related fluid sources and patient outcomes.

REFERENCES


