“This study describes the costs and outcomes of FO in patients receiving multiple continuous infusions” Child et al (2014).

Reference:

Child, D.L., Cao, Z., Seiberlich, L.E., Brown, H., Greenberg, J., Swanson, A., Sewall, M.R. and Robinson, S.B. (2014) The costs of fluid overload in the adult intensive care unit: is a small-volume infusion model a proactive solution? ClinicoEconomics and Outcomes Research. 15(7), p.1-8.

Abstract:

PURPOSE: Fluid overload (FO) in critically ill patients remains a challenging clinical dilemma, and many continuous intravenous (IV) medications in the US are being delivered as a dilute solution, adding significantly to a patient’s daily intake. This study describes the costs and outcomes of FO in patients receiving multiple continuous infusions.

MATERIALS AND METHODS: A retrospective study was conducted using a hospital administrative database covering >500 US hospitals. An FO cohort included adult intensive care unit (ICU) patients with a central line receiving IV loop diuretics and 2+ continuous IV infusions on 50%+ of their ICU days; a directly matched non-FO cohort included patients without IV diuretic use. The primary outcome of the study was total hospitalization costs per visit. Additional outcomes were ICU costs, mortality, total and ICU length of stay (LOS), 30-day readmission rates, and ventilator use. Unadjusted descriptive analysis was performed using chi-squared or paired t-tests to compare outcomes between the two cohorts.

RESULTS: A total of 63,974 patients were identified in each cohort. The total hospitalization cost per visit for the FO cohort was US$15,344 higher than the non-FO cohort (US$42,386 vs US$27,042), and the ICU cost for the FO cohort was US$5,243 higher than the non-FO cohort (US$10,902 vs US$5,659). FO patients had higher mortality (20% vs 16.8%), prolonged LOS (11.5 vs 8.0 days), longer ICU LOS (6.2 vs 3.6 days), higher risk of 30-day readmission (21.8% vs 21.3%), and ventilator usage (47.7% vs 28.3%) than the non-FO cohort (all $P<0.05$).

CONCLUSION: In patients receiving multiple continuous infusions, FO is associated with increased health care resources and costs. Maximally concentrating medications and proactively providing continuous medications in small-volume infusions (SVI) could be a potential solution to prevent iatrogenic FO in critically ill patients. Further prospective research is warranted to assess the impact of the SVI dispensing model on patient outcomes and health care costs.

Full Text

Thank you to our partners for supporting IVTEAM