Abstract:

Purpose: To outline a data-driven analysis involving use of intravenous (i.v.) pump data to identify optimal drug and fluid amounts for various continuous infusions, with the primary goal of minimizing medication waste. This methodology incorporates analysis of vial sizes, infusion rates, number of bag exchanges, and bag volumes to determine optimal concentrations that improve operational efficiencies and decrease drug and fluid waste.

Methods: A retrospective evaluation of i.v. infusion pump utilization data for continuous infusions of norepinephrine, phenylephrine, vasopressin, and cisatracurium was performed using data provided by 9 hospitals in North Carolina during January, April, and June of 2015.

Results: The recommended medication concentrations and fluid volumes were determined using a novel 4-step analysis, the VERB (Vial, Exchange, Rate, and Bag) analysis, which applied optimal practices for cost reduction, operational efficiency, and patient safety. The application of the VERB analysis to the i.v. infusion pump utilization data resulted in the following recommended medication concentrations: norepinephrine, 4 mg/100 mL (final concentration, 40 µg/mL) and 16 mg/250 mL (final concentration, 64 µg/mL); phenylephrine, 10 mg/100 mL (final concentration, 100 µg/mL); vasopressin, 20 units/100 mL (final concentration, 0.2 unit/mL); and cisatracurium, 200 mg/100 mL (final concentration, 2 mg/mL). It was determined that implementation of the recommended concentrations by the 9 study hospitals would result in significant medication cost savings and fluid volume savings.

Conclusion: Analysis of i.v. infusion pump data from multiple hospitals using VERB analysis resulted in standardized medication concentrations and bag sizes for continuous infusions that reduce drug and fluid waste and improve operational efficiencies.

Reference: