Intravenous Iron Order Set Optimization at an Academic Medical Center

Rachael Smith, PharmD | Angela Miller, PharmD, BCPS, DPLA | Claire Herbst, PharmD, BCPS

Purpose

Iron deficiency anemia (IDA) can occur from decreased iron absorption or increased iron loss such as hemorrhage, inflammatory bowel disease (IBD), or chronic kidney disease (CKD). Oral iron products are a cost-effective treatment; however, they can cause gastrointestinal (GI) upset and are absorbed slowly. Intravenous (IV) iron products are ideal for patients who cannot tolerate oral iron; however, carry risk for infusion reactions and iron overload. A drug utilization evaluation of adult patients receiving IV iron products at The University of Kansas Health System discovered differences in prescribing patterns among services and indications. Seventy one percent of orders were not ordered through the IV iron order set, which removes monitoring parameters, vital checks, and infusion reaction medications. Twenty seven percent of patients receiving IV iron products did not have iron studies (serum iron, ferritin, transferrin saturation, and total iron binding capacity) within 14 days prior. Twenty three percent of patients received greater than 1000 mg in a 14-day period, especially when considering iron supplied from blood transfusions, which risks iron overload. Order set optimizations were necessary to encourage order set use and maximize appropriate drug utilization and patient safety outcomes. Additionally, an outpatient anemia clinic served as a potential site for patients to receive treatment in the outpatient setting. The purpose of this study was to assess the impact of order set optimization on IV iron ordering practices based on indication and patient safety outcomes.

Methods

This study was an IRB-approved single site, quasi-experimental chart review comparing pre-intervention and post-intervention data. Optimizations to the IV iron order set included: restricting IV iron to the order set, populating iron studies into the order, including oral iron plus ascorbic acid to promote utilization when appropriate, a statement indicating the maximum recommended iron in a 14-day period including iron from blood products, indication-specific guideline table for appropriate use based on lab values, and a drop down selection of indication when ordering. Education was provided to pharmacists and a multi-disciplinary committee of acute care providers. Post-implementation data was collected after the intervention go-live date on December 3rd, 2020. The primary endpoint of this study was appropriate use of IV iron, assessed as a composite of indication and total iron received in a 14-day period. Indication was assessed using the indication selected through the order set and the corresponding lab values to support the selected indication. Total iron received was assessed by identifying if greater than 1000mg of iron was administered within a 14-day period including IV iron products and blood products (assuming maximum estimated iron per unit of blood to be 250mg). Safety endpoints included decrease in patients receiving greater than 1000mg of iron post-intervention and increase in availability of pre-medications or infusion reaction medications. Secondary endpoints included cost savings based on average total dose received post-intervention and number of referrals made to the outpatient anemia clinic.

Results/Conclusions

Research in progress