Medication Use Evaluation Abstract for MSHP

Title: Evaluation of intravenous immunoglobulin use at an academic pediatric hospital

Purpose:
Intravenous immunoglobulin (IVIG) is a biologic product derived of human plasma, donated from thousands of volunteers. The Food and Drug Administration (FDA) agency has approved IVIG for six adult indications and only three pediatric indications, however, there are many compendial uses which providers consider a cornerstone of therapy. Recently, IVIG products were affected by a critical shortage worldwide. To conserve IVIG, Children's Mercy Hospital Kansas City (CMKC) implemented restriction criteria. Consequently, the restricted use may impact patient outcomes for indications not included in the criteria, therefore a medication use analysis to determine the institutional pattern of IVIG use at CMHKC is crucial during this critical time.

Methods:
The Children's Mercy Institutional Review Board was approved this study. The primary objective was to characterize the inpatient and outpatient use of IVIG at CMKC between January 1 and December 31, 2018. This retrospective, observational chart review study included patients that received at least one dose of IVIG at CMKC or associated clinics during the study period. Patients were identified through a query from the electronic medical record to generate a list of potential patients. A 50/50 random sample of all inpatient and outpatient doses was conducted to produce one hundred total patients for review. All de-identified data was collected including patient sex, date of birth, age, and allergies; primary admission diagnosis, admission date/time, discharge date/time, length of stay, location of IVIG infusion; inpatient and outpatient clinics; dose, indication, frequency, prescriber, and medical service; if indication meet current restriction criteria; immunoglobulin levels, if applicable; pre, post, and IgG goal levels. Collected data was be analyzed using descriptive statistics to characterize IVIG use within the CMKC system.

Results:
For the 2018 year, there were 233 patients that received IVIG for a total of 1058 doses. Of the random 100 patient sample, there were 412 doses given in the both the inpatient and outpatient setting. More than half of all administered IVIG doses were given for transplant rejection, juvenile dermatomyositis, or low IgG levels. IVIG doses were prescribed by rheumatology, neurology, and hematology/oncology services 54.1% of the time. In our 2018 sample, more than half (54.1%) of the administered IVIG doses would not qualify for approval under the July 2019 restriction criteria. All doses prescribed by infectious disease would be approved while no doses prescribed by pulmonology nor dermatology would have been approved. Doses may not have qualified for the restriction criteria due to indication, dose, laboratory values, or concomitant medications. Almost half (49%) of the patients had commercial insurance.

Conclusions:
IVIG is frequently used off label in pediatrics, both in terms of indication and dose. We found that more than half of the doses in 2018 would not be approved under our new restriction criteria. More literature and discussions with providers, especially in pulmonology and dermatology, are needed to provide input regarding the current restriction criteria. Overall, continual evaluation of the restriction criteria should be performed to examine institutional use patterns, to determine the impact on patient therapeutic outcomes, and to identify modifications needed.