In June 2012, the Pharmacy and Therapeutics Committee reviewed one old and five new items of business:

Old item of business

1. Contrast media subcommittee minutes

New items of business

1. Medication Use Evaluation: Intravenous Immune Globulin, Lissa Shudak, PharmD
3. Antibiotic Subcommittee Minutes
4. Pharmacy Pharmacokinetics Protocol
5. Formulary Medication Request: Xifaxan 550 mg (rifaximin 550 mg)

A brief summary of each pertinent business item is below. The complete document can be reviewed by clicking the title.

Intravenous Immune Globulin

Click above link for complete document

Purpose

The goal of this medication use evaluation (MUE) is to assess the use and selection of different products of intravenous immune globulin (IVIG) in the University of Mississippi Medical Center (UMMC).

Conclusion

In Mississippi, 34% of adults are obese.\textsuperscript{1} Determining the dose of IVIG products in obese patients is a concern for the population of Mississippi. All studies that have been conducted with IVIG products used actual body weight, but morbidly obese patients were excluded in most studies.\textsuperscript{2} There have been several case reports of serious and fatal thromboembolic events in patients during or in short temporal relation to IVIG infusion.\textsuperscript{2,3,4,5,6,7} One proposed mechanism for the pro-thrombotic effects was an increase of plasma and blood viscosity.\textsuperscript{3} Obese patients have an increase in their overall volume of distribution but IVIG products have very little distribution in adipose tissue.\textsuperscript{2} A suggestion for dosing from a case series report was decreasing the dose of IVIG product given to obese patients to prevent an increase in serum levels of IVIG in the intravascular compartment.\textsuperscript{3} Seigel, in an IVIG Medication Safety Summary Report, recommends using an adjusted body weight if BMI > 30 kg/m\textsuperscript{2}.\textsuperscript{2}

Just over half (54\%) of dosages reviewed in this MUE were given to patients on an inpatient basis. The majority of the indications to receive IVIG were not FDA approved but most were either on the Medicare reimbursement list or an off label indication on Micromedex. Of the patients tested for IgA deficiency, 25\% (7/28) were IgA deficient. When patients’ baseline renal function was assessed, 17\% were found outside the normal range (7/42). The most common product given was Carimune\textsuperscript{®}. The rate of infusion was specified on the doctors’ order 72\% of the time. In all orders reviewed in the evaluation, actual body weight
was used for the dose calculation of the amount of IVIG product given. Only two patients experienced adverse effects (one with an increase serum creatinine and the other with a drop in platelet count).

Approved Recommendations

1) Educate staff to intervene and communicate appropriate IVIG products based upon renal function and IgA levels when appropriate.
2) The use of adjusted body weight in IVIG dosing for adult patients.

Sedation Protocol

Click above link for complete document

Purpose

The purpose of this activity is to evaluate the current Medical Intensive Care Unit (MICU), Surgical Intensive Care Unit (SICU), Coronary Care Unit (CCU), and Neurosurgical Intensive Care Unit (NSICU) sedation protocols for lorazepam, midazolam, and propofol to determine if the protocols are followed and properly documented.

Conclusion

These results indicate the main concern to address is improper documentation. A total of 63%, 60%, and 67% of patients in propofol, midazolam, and lorazepam groups, respectively, had SAS scores documented at least every 2 hours. This evaluation demonstrates there is a need for improvement on documentation of SAS scores at least every 2 hours and on matching SAS scores with GCS scores.

Additionally, there was improper documentation of doses on MAR versus the electronic pharmacy dispensing records. Improper midazolam loading dose documentation on MAR versus the electronic pharmacy dispensing records indicates there is a possibility that some loading doses are either not being given or are being given from the continuous infusion bag, instead of midazolam vials. Providing midazolam loading dose from the continuous infusion bag is acceptable; however proper documentation on the MAR should be emphasized. This evaluation also shows that lorazepam has not been used frequently as a sedative agent.

Improper continuous infusion initial rate and restarting rate was noticed among all groups. Titration rate was inadequate in the propofol group. Eleven patients received propofol at an infusion rate >50 mcg/kg/min; two of these patients received 80 mcg/kg/ min. These high infusion rates could potentially increase the risk for PRIS. Eight patients had triglycerides baseline levels documented, five patients had levels monitored every 72 hours, and five patients had levels greater than 400 mg/dL in the propofol group.

A limitation is acquisition of patient medical records or complete medical records. Another limitation is poor documentation of the reason for hypertriglyceridemia adverse effect, which is not possible to determine if it occurred due to underlying disease or medication induced.
Approved Recommendations

1) Informing prescribers, nursing staff, and pharmacists of the findings of this MUE with the goal of providing more education for improvement on protocol adherence and documentation including bolus and titration of sedatives and SAS scores.

2) Allow providers the ability to order routine scheduled triglyceride levels a frequency of “Q 72 hours” when treated with propofol to maintain compliance with the sedation protocol.

3) Provide results to the Critical Care Committee.

Pharmacy Pharmacokinetics Protocol

Click above link for complete document

Formulary Medication Request: Xifaxan 550 mg (rifaximin 550 mg)

Click above link for complete document

Rifaximin (Xifaxan®) is a non-absorbable antibiotic of the rifamycin class of antibiotics. It works by inhibiting RNA synthesis in bacteria of the GI tract which is thought to decrease the production of ammonia by the GI flora. As a result, decreased circulating ammonia levels in the blood may benefit patients with an acute hepatic encephalopathy (HE) exacerbation, prevent an overt HE occurrence, and/or prevent a hospitalization due to a HE breakthrough event. Rifaximin at a dose of 1100 mg/day (550 mg bid) has not been proven superior to comparators (lactulose, neomycin). However, it has been shown to be effective and safe with or without lactulose in patients with HE. However, rifaximin provides a means of dosing that is much easier to adhere to when compared to lactulose, as lactulose is dosed to the desired effect. Adverse effects due to lactulose therapy, such as flatulence and bloating, are notably less in patients receiving rifaximin only. There is no potential cost savings for using rifaximin in the place of lactulose for HE as rifaximin cost more per day to administer.

Rifaximin 550 mg was added to the UMC formulary but restricted to GI and transplant surgery providers only. All other providers can receive rifaximin 550 mg as a non-formulary agent.

Of note, rifaximin 200 mg indicated for traveler’s diarrhea is not a formulary agent.