Pharmacy Letter

Morristown Medical Center

Our Mission:
To be the recognized leader in medication management that drives safe, high quality and financially responsible patient care and outcomes across the continuum of care

THINK SEPSIS SAVE LIVES

By Suzannah Kokotajlo, PharmD

On May 1st, The Goryeb Children's Hospital kicked off its first ever Pediatric Sepsis Week

In the United States, more than 42,000 children develop severe sepsis each year and approximately 4,400 of them die. In an effort to help decrease the number of pediatric patients who are affected by sepsis, The Goryeb Children's Hospital recently joined a national collaborative developed by the Children's Hospital Association.

This collaborative includes 44 pediatric hospitals nationwide and its goal is to decrease deaths from pediatric sepsis by 80% by the year 2020. As part of this collaborative, a sepsis flowchart was developed for the Emergency Department and inpatient pediatric units, which includes triggers to help identify patients with sepsis and mandates that a huddle be held when sepsis is suspected. Data regarding time of fluid boluses and antibiotic administration, among other points, is being collected and submitted to the Children's Hospital Association for evaluation.

The inclusion as part of this collaborative was made possible by a generous donation from the R Baby Foundation. The event on May 1st included speakers from the R Baby Foundation as well as the Sepsis Alliance, a charitable organization which was created to raise sepsis awareness among both the general public as well as healthcare professionals. We were also fortunate enough to have parents come and share their stories about how their children were affected by sepsis and what they learned from the experience. There were also fun games, activities, and giveaways!

If you would like more information regarding sepsis, please visit the Sepsis Alliance website at www.sepsis.org or the Rory Staunton Foundation at www.rorystauntonfoundationforsepsis.org.

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Administrative Pharmacy Residency Project Reports

'Evaluation of parenteral nutrition indications and adverse events in adult patients in two community teaching hospitals'

Sonia Kothari, PharmD

Background: Nutrition support in adults is a complex and crucial aspect of patient care. Current guidelines recommend specialized nutrition support with enteral (EN) or parenteral nutrition (PN) for patients with inadequate oral intake for seven to fourteen days. PN has traditionally been indicated if EN is not feasible or will not provide adequate nutrition within seven days following admission. Initiation of PN is an invasive, multifactorial decision requiring assessment of the potential benefit prior to initiation. PN via central line has been associated with increased rates of bloodstream infections as well as glycemic variability, which has demonstrated increased incidence of mortality. The purpose of this study is to evaluate indications for PN and to assess glycemic variability, central line days and the incidence of bloodstream infections in the adult patient population at MMC and OMC.

Results: Upon completion of this study, it was discovered that 27% of patients who were evaluated received PN inappropriately. Out of a total of 869 days of TPN, 109 days were deemed inappropriate, with 95 central line days that could have been potentially avoided. Additionally, 65% of patients who were not already on PN at home were started on PN within five days from admission or becoming NPO. With respect to insulin, 66% of patients had insulin added to their PN, leading to many patients experiencing episodes of glycemic variability. Eighteen percent of patients who received insulin in their PN experienced 1 or more episodes of hypoglycemia, and 11% of patients experienced both hypo- and hyperglycemia. Lastly, 3% of patients developed a CLABSI after PN initiation via central line. All three of these infections involved appropriate use of parenteral nutrition.

Discussion: The decision to implement PN support has shown to be extremely subjective, resulting from unclear guideline recommendations and failure to adhere to appropriate PN use. A multidisciplinary approach among the pharmacy, dietary, and physician teams is crucial in determining appropriate use and initiation of PN. Although this evaluative study is limited by its retrospective design as well as the lack of a comparator group, it can be concluded that pharmacists can become more involved with the initiation of nutrition support therapy in order to ensure appropriate use and minimize the potential for adverse events.

'Evaluating the appropriateness of tbo-filgrastim use in oncology patients in two community teaching hospitals'

Treesa Joseph, PharmD

Background: Febrile neutropenia, a dose limiting toxicity of chemotherapy, is a major complication associated with myelosuppressive therapy. National Comprehensive Cancer Network (NCCN) and American Society of Clinical Oncology (ASCO) guidelines recommend the use of granulocyte- colony stimulating factors (G-CSFs) to reduce the risk, severity and duration of febrile neutropenia. Inappropriate or prolonged use of G-CSFs may result in increased cost and adverse events such as bone pain, musculoskeletal pain, and flu-like symptoms. The objective of this study was to evaluate the appropriateness of tbo-filgrastim use for the treatment or prophylaxis of febrile neutropenia within Morristown Medical Center and Overlook Medical Center.

Results: A retrospective chart review of 160 randomly selected hospitalized adult patients receiving tbo-filgrastim from March to September 2016. Patients with an oncology related disease, receiving chemotherapy within 7 days, or with febrile neutropenia were included (n=90). Patients receiving only 1 dose of tbo-filgrastim, or with severe chronic neutropenia were excluded. The primary endpoint was the percentage of patients receiving tbo-filgrastim for an appropriate indication. ASCO defines appropriate indications as prophylaxis of neutropenia in patients undergoing chemotherapy or treatment of febrile neutropenia defined as a neutrophil count less than 1,000 neutrophils/mcL with a temperature of greater than 38.3°C. The secondary endpoint was the percentage of patients in whom tbo-filgrastim therapy was appropriately discontinued. Additionally, the cost incurred from inappropriate therapy was also analyzed.

Discussion: Overall 78.8% of patients had an appropriate indication and appropriate duration of therapy. Twenty-one percent of patients inappropriately received a course of tbo-filgrastim. Afebrile neutropenia was noted to be the main reason for inappropriate use. Additional cost of $25,364 was incurred due to the inappropriate use and/or continuation of therapy. An interdisciplinary approach to the initiation and duration of tbo-filgrastim involving pharmacy, nursing and prescribers can reduce the additional financial burden as well as side effect profile in hospitalized oncology patients.

'Evaluation of appropriateness and financial impact of administering restricted outpatient medications in inpatient settings'

Danielle McDonald, PharmD

Background: High-cost intravenous infusions are often restricted to outpatient use when indicated for chronically managed conditions. These infusions are usually not indicated for or have no proven benefit in acute management of inpatients, and insurance providers oftentimes do not provide a carve-out to reimburse the cost. Although this restriction is in place to ensure judicious use, inpatient administration is not prohibited, and patients with clinical benefit may receive these medications on a case-by-case basis.

In May of 2016, a novel order policy was implemented at Morristown Medical Center to formalize and standardize the process of approving the use of these restricted medications. The policy requires approval by the Department Chair and/or Chief Medical Officer prior to administration to achieve standardized oversight and facilitate prescriber-to-pharmacy communication.

The objective of this study was to evaluate the impact of this policy by measuring appropriateness and financial impact of restricted medication use before and after policy implementation.

Results: Between November 2015 and November 2016, patients received inpatient infusions of infliximab, ferric carboxymaltose, and various chemotherapeutic agents. During the 6 months pre-policy, 33 doses were administered, and this number decreased to 28 during the 6 months post-policy. Appropriateness, as defined by medication administration to patient discharge median time, was evaluated for each drug category. Appropriateness increased in the infliximab and ferric carboxymaltose subgroups. Post-policy, cost of medications decreased in the ferric carboxymaltose and chemotherapy subgroups.

Discussion: Overall, there continues to be increased oversight on the use of these medications as well as increased discussion and accountability amongst prescribers and pharmacy. In the future, these medications will continue to be prospectively monitored, and this policy may be extended to apply to all facilities within Atlantic Health System.