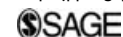


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NYSCHP Research and Education Amgen Oncology Leadership Award Winner

Evaluation of Safety and Efficacy of Collapsed-Dose Palifermin for Mucositis Prophylaxis in Patients Undergoing Hematopoietic Stem Cell Transplantation at The Mount Sinai Medical Center

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Objective: Mucositis is a complication frequently associated with hematopoietic stem cell transplantation (HSCT) following high-dose chemotherapy with or without total body irradiation (TBI). Palifermin, a keratinocyte growth factor, has been shown to decrease the severity and occurrence of mucositis, improving patients' quality of life, shortening the length of hospital stays, and ultimately reducing the health care cost. While the novel mechanism of palifermin makes it an attractive prophylactic agent for mucositis, its high cost of therapy (\$7000 per patient) can potentially put a significant financial burden on an institution. The current practice guideline by American Society of Clinical Oncology recommends using palifermin only in those patients who are receiving TBI containing fully myeloablative conditioning regimen prior to undergoing HSCT. An exponential increase in palifermin usage at our institution prompted us to conduct a medication use evaluation to assess its role in preventing mucositis as well as to assess our prescribing pattern of palifermin. **Methods:** The current study is a single-center, retrospective chart review from June 1, 2007, to May 1, 2009, to evaluate the safety and efficacy of collapsed-dose palifermin in adults. Patients were identified using the pharmacy computer system, and data were collected through various electronic medical systems. The primary objective is to assess the incidence and duration of mucositis occurrence in adult patients who were treated with palifermin prior to and after receiving myeloablative conditioning regimen. The secondary objective is to assess the occurrence of adverse events of palifermin. **Results:** Patients on collapsed-dose palifermin will be evaluated for efficacy, and results will be presented. **Conclusion:** It is anticipated that this project will demonstrate safety and efficacy of collapsed-dose palifermin in patients receiving myeloablative conditioning regimen prior to undergoing HSCT.

Evaluation of the Effectiveness of a Drug Information Center for Patients and Health Professionals at a Community Hospital

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Objective: The project goals are to enhance the quality of patient care and improve patient safety through prevention of medication errors, adverse drug events, and unnecessary emergency department and physician office visits. In addition, to demonstrate the clinical effectiveness and cost efficiencies associated with operating a hospital-based Drug Information Center (DIC) and provide a forum for disseminating results in order that other hospitals may develop DICs to enhance the quality of patient care. **Background:** In New York State, hospital-based DICs are uncommon; the majority of DICs are oriented toward health professionals and do not serve patients or consumers. Such individuals require a trusted source for medical information. Kingsbrook Jewish Medical Center's (KJMC) Department of Pharmacy developed a hospital-based DIC which serves as a centralized resource for unbiased, up-to-date, and comprehensive drug information for KJMC patients and health professionals who reside in the medically underserved neighborhoods of Brooklyn, New York. **Methods:** A full-time clinical pharmacist responds to inquiries regarding drug dosing, adverse drug events, and appropriate therapies for specific patients in person and by telephone, mail, and e-mail, and provides timely and appropriate medication advice. For each drug information inquiry, the DIC pharmacist will document the call electronically in a customized Microsoft Access database management system recording the following information: unique identifying number of patient inquiry; date and time inquiry received; type of inquiry; caller (KJMC patient vs health care provider); referral source if relevant; requester's name, address, and contact information (unless the caller is anonymous); whether the communication method is via telephone, e-mail, fax, or in person; question asked; category of request; requester data obtained to answer question; response to question; method of response delivery; references consulted; name of person answering the inquiry; and time used to answer the inquiry. Drug information questions will also be entered into a secondary intervention database, Clinical Measures[®], which will enable automatic capture and reporting of required data such as number of medication errors, adverse drug events, number of physician office, and emergency department visits prevented. **Results and Conclusions:** To be determined.

Evaluation of Quetiapine Use in an Inpatient Urban Teaching Hospital

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Purpose: Quetiapine fumarate is an atypical antipsychotic that is approved for the treatment of schizophrenia and bipolar disorder, with normal dosing in adults ranging from 300-800 mg/day. There is evidence to support off-label use of quetiapine for other psychiatric conditions, including agitation/aggression and refractory anxiety. Despite the many labeled and off-labeled indications for quetiapine use, it is also prescribed for indications at doses that are not supported by clinical data without the

proper monitoring parameters. This study assessed the appropriateness of the use of quetiapine with regard to indication, dosing, and monitoring parameters. **Methods:** A retrospective chart review was performed for patients receiving quetiapine while admitted to the acute units from May to October 2009. Pharmacy reports of patients for this 6-month period were reviewed to identify subjects receiving quetiapine. The sample for evaluation was randomly selected and was stratified based on admission to the inpatient psychiatric unit. Data collected and analyzed included patient demographics, indication for use of quetiapine, dose of quetiapine, vital signs, concomitant medications, and orders for laboratory or diagnostic testing. **Results:** 100 subjects were randomly selected for chart review and stratified by psychiatric unit (38%) and nonpsychiatric unit (62%) to accurately represent the hospital population use of quetiapine. The mean age was 71.3 (SD \pm 14.99), with 51% of the study population being women. A preliminary analysis of 26 subjects showed that upon discharge, the mean dose of quetiapine was 181.7 mg (SD \pm 188.49). Lipid panels were ordered in 16 (61.5%) of the subjects, while 11 (42.35%) subjects had an order for an EKG. **Conclusion:** Pending.

Evaluation of the Use of Phytonadione in Warfarin Reversal at a Community Hospital

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Purpose: In response to a lack of uniformity and evidence-based use of phytonadione to reverse warfarin, Kingsbrook Jewish Medical Center implemented an institutional protocol to treat warfarin-induced elevated international normalized ratio (INR) and/or bleeding on January 1, 2009. This review evaluates adherence to phytonadione use as recommended by this protocol, and assesses its efficacy and safety. **Methods:** This is a retrospective review of inpatients who received phytonadione at any dose and route to reverse warfarin for elevated INR and/or bleeding between January to October 2009. If consecutive doses were used to treat the same event, only phytonadione doses administered on the first day were included. Labs obtained include INRs on the first day of phytonadione treatment (Day 0), within 24 and 48 hours after, and hematocrit and hemoglobin on admission and Day 0. Administration of blood transfusions and/or fresh-frozen plasma were identified. Safety and rationale for dose and route of phytonadione therapy were collected from adverse drug event reports, pharmacy computerized profile, computerized physician order entry system, chart review, and emergency department and ambulatory care electronic health record systems. **Results:** In a preliminary analysis from May to July 2009, 108 cases of administered phytonadione were identified. Phytonadione was used for elevated INR in 28.7% of cases, at a mean dose of 8.15 mg. Routes of administration were oral (48.4%), intravenous (29%), intramuscular (16.1%), and subcutaneous (5.9%). Mean INR on Day 0 was 7.12, and mean INR reduction from Day 0 to Day 1 was 3.96. No phytonadione adverse drug events were reported in 2009. **Conclusion:** Preliminary analysis suggests deviation from protocol phytonadione route recommendations, although chart review is needed to determine if justified. Elevated INR comprised the minority of phytonadione use, indicating that protocol modification may be needed to include other uses. Other conclusions are pending further data collection and analysis.

Pneumococcal Vaccine CPOE Pathway for Preventing Revaccination of Patients With Multiple Admissions in a Community Hospital: Effective or Not Effective?

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Introduction: In the 4th quarter of 2003, compliance with pneumococcal vaccination assessment in patients ≥ 65 years old admitted to Kingsbrook Jewish Medical Center (KJMC) for pneumonia was poor, possibly due to discrepant record keeping and assessment. This triggered the creation of a computerized vaccine assessment and tracking pathway in January 2004. The pathway includes a Clinical Observations & Results (COR) database to permanently store vaccination order entry and a nursing vaccination assessment pathway which requires nurses to review the vaccination history of admitted patients and intervene, when necessary. According to the American Thoracic Society/Infectious Disease Society of America (ATS/IDSA) guidelines, pneumococcal polysaccharide vaccine is recommended for persons ≥ 65 years old and for high-risk persons 2-64 years. Revaccination is not routinely recommended for patients ≥ 65 years. Our objective is to assess the effectiveness of the vaccination tracking pathway in preventing patients from inappropriately receiving multiple pneumococcal vaccinations. **Methods:** 100 inpatient medical records for patients admitted from November to December 2009 who were ≥ 65 years with >1 admission to KJMC were reviewed. Data were analyzed to detect any deviation from the ATS/IDSA guidelines in the administration of the pneumococcal vaccine using the Computerized Physician Order Entry (CPOE) pathway. **Results:** Physicians inappropriately ordered second or more doses (<5 years apart) of pneumococcal vaccine in 37 of 100 patients (37%) and of these, 19 were inappropriately vaccinated more than one time. Eighteen of the 37 patients were inappropriately ordered a pneumococcal vaccine, however, they did not receive it due to nursing intervention made possible via the vaccination assessment pathway. Overall compliance with the ATS/IDSA guidelines for Pneumococcal vaccination was 81%. **Conclusion:** Through a systems-based, multidisciplinary CPOE approach to vaccination assessment and administration, KJMC improved vaccination recording and had a low/moderate rate of revaccination. Improvement is still needed to reduce revaccination rates via inclusion of pharmacists in the vaccination reconciliation process.

Rhabdomyolysis With Significant Creatine Phosphokinase Level Elevations in a Patient Treated With Concomitant Pregabalin and Simvastatin in a Community Teaching Hospital

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Objective: To report a case of rhabdomyolysis associated with concomitant use of pregabalin and simvastatin. **Case Summary:** A 70-year-old

male was admitted to the hospital with altered mental status, limb weakness, twitching, and slurred speech. His past medical history is significant for fibromyalgia, Type 2 diabetes, hypercholesterolemia, chronic low-back pain and hypercholesterolemia. He was on multiple pain and neuropathy medications, and recently started (4 days prior) lisinopril for diabetes and simvastatin for hypercholesterolemia. The same day, his pregabalin dose was increased from 50 mg to 100 mg three times daily. On admission, the serum creatinine (SCr) and creatine phosphokinase (CK) were 1.5 mg/dL (normal, 0.7-1.5 mg/dL) and 1391 U/L (normal, 30-170 U/L), respectively. Metformin was discontinued and he was changed to sliding scale insulin. He was completely alert and oriented. The review of symptoms was normal except for leg (>arm) weakness. A head CT was negative for an infarct or hemorrhage, and EEG showed no seizure activity. The simvastatin was discontinued and he was aggressively hydrated. The following day, his SCr was 1.6 mg/dL and his CK peaked at 14,191 U/L. The pregabalin was then discontinued. Based on the presentation it was decided that the rhabdomyolysis was due to the simvastatin and maybe due to pregabalin. The Naranjo Probability Scale indicates that a probable relationship exists between rhabdomyolysis and combined therapy. Three days after discontinuation of pregabalin and simvastatin, the patient's weakness and mental status had improved, his extremities were stronger (4-5 on a scale of 5), and he was able to bear his own weight. His SCr was 0.9 mg/dL and his CK trended downwards to 3437 U/L. Upon discharge he resumed all his prior medications except for simvastatin and pregabalin. He was to follow up with a specialist as an outpatient. **Discussion:** Statins are known to cause rhabdomyolysis. There is limited data suggesting pregabalin causes rhabdomyolysis. Simvastatin is biotransformed in the liver primarily by CYP3A4, which may increase the risk of rhabdomyolysis when concurrent therapies that can also cause rhabdomyolysis, are combined. The cause of rhabdomyolysis in our patient may be related to the interaction of pregabalin and simvastatin due to decreased renal elimination (eg, renal tubular reabsorption). **Conclusions:** It is not well known that pregabalin causes rhabdomyolysis. It is therefore important for pharmacists and other clinicians to be aware of this potential serious and life-threatening reaction, especially when medication doses are doubled or combined with other agents, to prevent adverse outcomes.

Use of Oral Midodrine in Weaning Off Intravenous Vasopressors in Patients With Septic Shock

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Purpose: Intravenous (IV) vasopressors are used for hemodynamic instability in the intensive care unit (ICU). When stable, patients are weaned off IV vasopressors. Failure to wean may lead to increased length of stay and ICU-related complications. Use of midodrine, an oral sympathomimetic, may decrease the time to wean off IV vasopressors for patients. Our goal is to compare the time to wean between patients on IV vasopressors with midodrine versus IV vasopressors alone. **Methods:** We conducted a randomized, retrospective study in ICU patients receiving IV vasopressors with midodrine (Group A) versus IV vasopressors alone (Group B) from December 2007 to December 2009. The primary endpoint was time to wean off IV vasopressors. Exclusion criteria included patients that expired while receiving vasopressors and when midodrine was used for reasons

other than hypotension due to septic shock. **Results:** Forty patients were included in the study (20 in each group). Median time-to-wean off was shorter in Group A versus Group B (2 vs 3 days). Mean time-to-wean off was statistically significantly shorter in Group A (3.4 vs 3.7 days, $P = .049$). Patients in Group A received mineralocorticoid(s) more frequently than those in Group B ($n = 17$ vs 5). In these patients, the mean time-to-wean off was longer in Group A (6.6 vs 3.2 days, $P = .087$). A similar number of patients received IV hydrocortisone ($n = 4$ vs 5). In these patients, mean time-to-wean off was longer in Group A (7.25 vs 3.2 days, $P = .271$). A similar number of patients received multiple IV vasopressors ($n = 7$ vs 9). For patients on multiple IV vasopressors, mean time-to-wean off was longer in Group A (5 vs 3.8 days, $P = .211$). **Conclusions:** Midodrine may decrease the time to wean off IV vasopressors in patients recovering from septic shock, potentially resulting in decreased length of stay and ICU-related complications. A well-designed, clinical trial is needed to determine the beneficial effects that midodrine may have on improving ICU comorbidity and all-cause mortality.

Use of Proton Pump Inhibitors and Prevalence of Clostridium Difficile Infection at a Community Hospital

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Purpose: An arising prevalence has been noted with increased risk of *Clostridium difficile*-associated diarrhea (CDAD) and the use of gastric acid suppressants, especially with proton pump inhibitors (PPIs). Our institution implemented stress ulcer and NSAID-induced gastropathy prophylaxis guidelines in hopes of reducing the incidence of CDAD. The primary objective of the study is to compare the prevalence of CDAD rates before and after implementation of the prophylaxis guidelines. The secondary objective is to identify other independent risk factors of CDAD. **Methods:** The prevalence of CDAD rates before guideline implementation (October 2008 to March 2009) will be compared to the rates of CDAD after guideline implementation (October 2009 to March 2010). All inpatients with documented CDAD from both time periods will be included in the analysis. Baseline demographics and CDAD prevalence rates will be compared using chi-square or Fisher's exact test for categorical variables and *t*-test or Mann Whitney *U* test for continuous variables. Cox proportional-hazard regression analysis will be used to evaluate the association between gastric acid suppressant exposure and CDAD while controlling for other known risk factors for CDAD. **Results:** Our preliminary data showed that there were 15 patients with documented CDAD prior to guideline implementation. The identified risk factors of CDAD in these patients included use of antibiotics within 8 weeks ($n = 14$; 93.3%); concomitant use of gastric acid suppressants ($n = 14$; 93.3%); hospital admission within 90 days ($n = 7$; 46.7%); and stay in a nursing home facility within 90 days ($n = 3$; 20%). Of those patients receiving gastric acid suppressants, 13 (92.9%) were on a PPI and 1 patient (7.1%) on histamine II receptor antagonist. Data after guideline implementation is pending. **Conclusion:** Pending.