Sugammadex Effect on Neuromuscular Blockade Reversal and Incidence of Pulmonary Complications in Comparison to Neostigmine in Adult Colorectal Surgical Patients

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Introduction: Neostigmine has traditionally been used for the reversal of non-depolarizing neuromuscular blocking agents to prevent post-extubation residual paralysis which may cause excessive adverse events. Unfortunately, neostigmine has an indirect mechanism of action, unpredictable efficacy, and undesirable autonomic responses. Sugammadex, a selective relaxant-binding agent developed for rapid reversal of rocuronium-induced neuromuscular blockade provides a faster and more predictable reversal, a reduced incidence of residual block, and a more efficient use of healthcare resources. This study evaluated the recovery room length of stay and pulmonary complications in patients who received a reversal agent.

Methods: The Western Institutional Review Board approved this retrospective, observational case control study of patients who underwent colorectal surgery in July 2021 for whom either neostigmine or sugammadex was prescribed post-operatively. Inclusion criteria were patients aged 18-65 years undergoing general anesthesia and receiving rocuronium prior to undergoing inpatient colorectal surgery. Patients were excluded if outside stated age range, undergoing an outpatient procedure or an emergency procedure, intubated prior to operating room arrival, moribund or a brain-dead undergoing organ procurement, or combination of neuromuscular blockade reversal agents used. Data collection included age, weight, sex, neuromuscular blockade reversal agent received, dose of neuromuscular blockade reversal agent, length of post-anesthesia care unit (PACU) stay, and presence or absence of re-intubation. The primary outcome of the study, evaluated using a two-sided T-test, included PACU length of stay in hours. The secondary outcome studied was incidence of pulmonary complications, indicated by the need for continued mechanical ventilation or re-intubation.

Results: The study included 39 patients, 19 received sugammadex and 20 received neostigmine. There was no difference in PACU length of stay between neostigmine and sugammadex [3.055 hours (95% CI 1.94-4.06) vs. 3.45 hours (95% CI 2.35-4.44)]. The between group difference in PACU length of stay was 0.395 hours (95% CI -1.01-1.80). Between group pulmonary complications would have been compared using a Chi-squared test or Fisher's exact test but upon visual inspection of the scores it was apparent there was no association.

Conclusion: In this retrospective case control study comparing effects of sugammadex and neostigmine, sugammadex showed no difference in PACU length of stay or in incidence of pulmonary complications. The results of this study emphasize the need to perform future research using a larger sample size, additional measurable parameters such as perioperative qualitative/quantitative train of four measurements, and additional methods to measure pulmonary complications.

Implementation of a pharmacist initiated naloxone counseling and dispensing program in a community pharmacy setting

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Purpose: Deaths from opioid overdoses have been on an upward trend nationally since 2013, totaling 69,000 in 2020. The CDC issued guidance on prescribing naloxone in 2016; however subsequent analysis has shown that naloxone is prescribed to less than 1% of patients for whom clinicians should consider co-prescribing naloxone.

Methods: Pharmacists at our five retail pharmacies began actively screening all patients who presented with an opioid prescription to determine if they met the following criteria: 1) A total daily morphine milligram equivalent (MME) of 50 MME --or-- 2) An opioid co-prescribed with a benzodiazepine, gabapentin, or pregabalin. All of our retail pharmacists were educated through available programs to become naloxone trainers. When patients who met the criteria arrived to pick up their opioid prescription, they were counseled by a pharmacist about the need for them to have naloxone available. If they were agreeable, naloxone was dispensed under a valid New York State standing prescription, and the patient was trained on proper use. New York State's naloxone copay assistance program (N-CAP) and/or our organization's 340b reallocation funds were used to minimize the costs. All providers were notified that naloxone had been dispensed to their patient.

Results: From April to December 2021, 704 patients met the criteria for naloxone dispensing. 480 patients (68.2%) accepted, were counseled on the proper use, and had naloxone dispensed.

Conclusion: Increasing the availability of naloxone in patients at risk due to prescription opioids can be accomplished by community pharmacists in states where standing orders for naloxone are available, and if costs can be reduced to a minimum for patients. Our acceptance rate shows patients are both willing to be counseled and readily accepting of the need to have naloxone available for use.

Extension of Tamiflu Shelf-Life in Strategic Stockpile for Public Health

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Objectives: The strategic national stockpile (SNS), is a mechanism for the federal government to prepare for disasters that would require mass dispensing of drugs. The antiviral, Tamiflu, is a drug in the SNS and state stockpiles that have mostly expired and it is unknown if these reserves are pharmaceutically active. This jeopardizes public health during influenza pandemic. Stockpiled medications should be replaced on a regular basis, accruing significant cost and waste. As a result, the Federal Government established the shelf life extension program (SLEP) to permit usage of expired federal stockpile medications during times of national disasters. Several expired lots of Tamiflu are stored in a secure facility by the county Department of Public Health. County stockpiles are not under federally mandated stockpile guidelines, nor does SLEP provide guidance on shelf life extension of these local reserves. This study evaluated the quality of several Tamiflu stocks stored in the county stockpile.

Methods: USP method for oseltamivir phosphate was used to measure drug potency of stockpiled Tamiflu. Practical modifications to the USP dissolution method were used to evaluate the drug release of samples.

Results: Chemical stability of three lots of expired Tamiflu indicated satisfactory drug potency with all lots meeting the USP acceptance criteria of the labeled claim. Dissolution testing showed that all three Tamiflu lots passed the criteria of no less than 75% of labeled amount of drug dissolved. All samples analyzed had approximately 100% dissolution and chemical release attributes comparable to controls.

Conclusions: All expired lots of stockpiled Tamiflu tested were stable and potent based on USP guidelines. These stocks of Tamiflu could be authorized for use in response to influenza outbreak to protect the public health.

Comparison of high dose nitroglycerin dosing strategies for respiratory distress in sympathetic crashing acute pulmonary edema

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Background: Sympathetic crashing acute pulmonary edema (SCAPE) is a severe presentation of acute decompensated heart failure in which increased catecholamine activity leads to severe respiratory distress. The standard of care in management of SCAPE is initiation of non-invasive ventilatory support via bilevel positive airway pressure (BiPAP) as well as initiation of intravenous (IV) nitroglycerin. Nitroglycerin dosing strategies vary widely for this indication, and there is limited evidence on which dosing strategy leads to better outcomes. Objective: The purpose of this study will be to determine that the rate of resolution of respiratory distress for SCAPE in the emergency department (ED) is related to the dosing strategy of high dose IV nitroglycerin.

Methods: This is an IRB-approved single-center, prospective, observational cohort study assessing the use of high dose IV nitroglycerin for patients presenting to the ED with SCAPE from October 1st, 2021 to March 31st, 2022. Patients will be included who are at least 18 years of age and requiring IV nitroglycerin. Patients will be excluded if there is suspected myocardial infarction. Data will be collected prospective by an ED physician or pharmacist using a standardized form. The primary outcome will be resolution of respiratory distress at 10 minutes. Secondary outcomes will be the initiation of nitroglycerin IV infusion following a bolus dose, intubation, initiation of BiPAP, and ICU admission. Safety outcomes include percent reduction in blood pressure at 10 minutes, hypotension defined by reduction in systolic blood pressure to less than 90 mmHg, headache, flushing, and extravasation. Data will be retrospectively analyzed. Patients who receive bolus dose IV nitroglycerin will be compared to those initiated on continuous IV nitroglycerin infusion. Statistical analysis will be Chi-square for the primary outcome. A p value of 0.05 will be considered statistically significant. All other outcomes will be descriptive (e.g., mean ± standard deviation).

Results: In progress

Conclusions: In progress

Evaluation of CMR Completion Rate among Medicare Part D Members enrolled in a Large Health Plan

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Background: Medication therapy management (MTM) is a process whereby pharmacists work directly with patients to optimize their medication use. A key component of MTM is a comprehensive medication review (CMR), which have been shown to provide many positive benefits, such as increasing medication adherence, mitigating side effects, reducing risk for future adverse events, educating patients on their medications, and saving costs. The Centers for Medicare & Medicaid Services (CMS) have established minimum requirements for health plans to follow in establishing patient eligibility for enrollment in these programs. Patients under their Medicare Part D plan that meet the eligibility are recommended to undergo at least one CMR each year. Annual CMR completion has developed enough significance throughout the years that it will affect health plans' Part D Star ratings. Given the recent CMS cut rates for CMR completion rates, plan sponsors have been striving to reach 4 to 5 Star ratings through patient engagement.

Objective: The primary objective is to determine the distinct types of factors and variables that may affect patient engagement in the completion of CMRs.

Method: Retrospective patient data are extracted from MTMPath and will be identifiable. Patients that were identified and selected into both study groups will be analyzed in 2 categories: Demographic: patients will be assessed based on age, sex, ethnicity, geographical location (urban vs. rural) and if the patients reside in a long-term care facility (LTC).Clinical variables: patients' medical burden will be assessed via the Charlson Index using diagnosis codes available. Drug burden will also be assessed through medication quantity, adherence status using Proportions of Days Covered (PDC) for hypertension, diabetes and dyslipidemia regimen, and patient medication profile considering Morphine Milligram Equivalence (MME).

Results: In progress.

Conclusion: In progress.

Low Dose Tocilizumab Plus Corticosteroid versus Corticosteroid in Hospitalized COVID-19 Pneumonia Geriatric Patients

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Background: Tocilizumab has been used in the treatment of COVID-19. It is uncertain how much benefit tocilizumab provides for patients already receiving corticosteroids. Current studies have generated mixed results regarding tocilizumab use and data is still lacking in geriatric population.

Objective: To evaluate if a low dose tocilizumab combined with corticosteroids would reduce mechanical ventilation among geriatric patients.

Methods: This retrospective observational cohort study included hospitalized patients aged 65 and older with COVID-19. Data were extracted from electronic health records. This study was granted exempt status by the Institutional Review Board. Patients who received a fixed dose of tocilizumab at 400 mg plus dexamethasone or methylprednisolone and those who only received a corticosteroid were divided into treatment and comparator groups, respectively. The primary outcome was the incidence of mechanical ventilation at 28 days. The secondary outcomes were in-hospital mortality and the incidence of hepatic injury, bacteremia, and fungemia.

Results: 355 patients were included, with 176 patients in the tocilizumab plus corticosteroid (treatment) group and 179 in the corticosteroid (comparator) group. The incidence of mechanical ventilation was 20% (95% confidence interval [CI], 14.8% to 28.4%) in the treatment group and 11% (95% CI, 7.2% to 17.3%) in the comparator group [odds ratio, 1.4; 95% CI, 0.69 to 2.66; p= 0.383 by the z-test (b/SEb)]. In-hospital deaths occurred in 32% (95% CI, 25.0% to 42.0%) of the treatment group as compared to 17% (95% CI, 11.7% to 24.0%) in the comparator group (difference between proportions: 16%; 95% CI: 6.2% to 25.0%; p= 0.001). In the safety population, adverse effects occurred in 30% of the treatment group and in in 9% of the comparator group.

Conclusion: There was no difference in the incidence of mechanical ventilation with tocilizumab and corticosteroid combination, but it might be associated with higher in-hospital mortality, and more adverse effects in elderly patients.

Evaluation of the predictive performance and quantification of the inter-rater reliability of regression models to detect carbapenem-resistant gram-negative bacterial infections at the time of hospitalization

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Purpose: Carbapenem-resistant Enterobacteriaceae (CRE) are a significant concern for patients in healthcare facilities. CRE are difficult to treat because they do not respond to commonly administered antibiotics, making them a threat to public health. Patients infected with CRE are subject to delayed appropriate initial antibiotic therapy and, consequently, increased mortality. To begin appropriate treatment promptly, it is vital to identify patients at increased risk for infection due to CRE organisms. However, the performance of models to detect carbapenem-resistant bacterial infections is still uncertain. This study aims to evaluate the predictive performance and inter-rater reliability of existing risk prediction models to help identify patients at risk and thus provide the basis for selecting timely appropriate antibiotic therapy.

Methods: This was a 200 inpatient retrospective cohort analysis; patients included in the study population were adults (>18 years) with positive Carbapenem-resistant Enterobacteriaceae serology, who had >one admission to Mount Sinai Hospital from March 2018 to March 2020. The Institutional Review Board approved this study. Electronic medical records are being reviewed, and data is being collected. Significant risk factors for carbapenem resistance, such as comorbidities, hospitalizations, infection sites, antibiotic utilization, ICU admission, etc., will be entered into three different Carbapenem-resistant Enterobacteriaceae (CRE) prediction tool models to compare models' performance further. All statistical analyses will be carried out using the RÂ® software. Multivariable logistic regression and Area Under the Receiver Operating Characteristics Curve will be used to establish and compare model performance to evaluate the predictive performance and quantification of regression models to detect inpatient CRE risk during hospitalization.

Results: N/A

Conclusions: N/A

Analysis of Imposter Phenomenon Tendencies in First-Professional Year Student Pharmacists

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Introduction/Background: Imposter phenomenon (IP) occurs in people who doubt their abilities and experience persistent fear of being exposed as a fraud. Research shows that imposterism is prevalent among pharmacy students, residents/practitioners, and faculty. IP can lead to burnout, anxiety and inability to recognize accomplishments, hindering one's professional identity formation. Research focused on first-year pharmacy students (P1s) is needed to identify and address imposter tendencies during this critical foundational phase of identity formation.

Objective: The objective of this study was to analyze the prevalence, intensity and demographic distribution of IP tendencies within P1 students.

Methods: A voluntary electronic survey was anonymously administered to 167 P1 students in a required pharmacy course. The survey included 20 items from a validated IP scale and 4 demographic questions (gender identity, race/ethnicity, years of pre-pharmacy education, and first-generation family member to attend college). IP survey scores of >60 are in the clinical range, indicating frequent or intense (for scores >80) IP tendencies. Students privately received their IP score upon survey submission.

Results: Overall mean IP score for P1 students (N=163, 97.6% response) was 62.7, in clinical range, with 48% and 10% in the frequent and intense ranges, respectively. More women than men were in clinical IP range (65% vs. 40%, respectively). Students with two years of college before P1 were more commonly in clinical IP range when compared to those with > 3 years (67% vs. 42%). Non-first-generation students have clinical IP more commonly than first-generation students (53% vs. 47%, respectively), the reverse of what was expected.

Conclusion: A significant percentage of P1 students exhibit IP tendencies, with 58% in the clinical range, and higher prevalence in females and those with >3 years pre-pharmacy education. These results informed our next steps, which involved education to reduce IP tendencies in current students, and early identification and intervention strategies for future P1 students.

Evaluation of Droperidol Use in the Emergency Department for Nausea/Vomiting and Agitation

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Intro/Background: Droperidol is an antipsychotic and antiemetic approved for postoperative nausea and vomiting (N/V) but has also been used in the emergency department (ED) for agitation. A black box warning was issued for QTc prolongation and arrhythmias, which lead to it being taken off the market. Due to its efficacy and low number of QTc prolongation and arrhythmia cases, it is being used again at single low doses of 2.5mg or less for N/V, and 2.5 mg or more for agitation. For doses 2.5mg or higher, an electrocardiography (ECG) is recommended before and after administration for monitoring.

Objective: The primary objective was to evaluate if appropriate dosing of droperidol was being used in the ED.

Methods: This was an IRB approved, retrospective quality improvement project of droperidol use in the ED from 5/10/21-11/10/21. A chart review was done for all patients that received droperidol in the ED, and data collected included indication, dose, adverse effects, and if ECGs were completed for doses of 2.5mg or higher.

Results: There was a total of 205 administrations, which all received the correct dose for their indication with 198 (96.5%) being N/V, and 7 (3.5%) being agitation. 8 patients received doses of 2.5mg or higher, indicating they should've received ECGs. Out of the 8 patients, 3 had an ECG either before or after administration (37.5%), 2 had an ECG before and after (25%), and 3 never received one (37.5%). One patient experienced QTc prolongation with a dose of 5mg but did not progress into an arrhythmia. There were two patients that had an increase in heart rate with a dose of 0.625mg, and one experienced akathisia with a dose of 1.25mg.

Conclusion: The correct dose of droperidol was used for its indication, and minimal adverse effects were experienced, but there was a lack of ECG monitoring with higher doses.

Investigation Into Rates of Hypoglycemia in Hospitalized Patients Managed by a Pharmacist Automatic Insulin Adjustment Protocol

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Background: Blood glucose excursions are common during inpatient hospital stays. To help address this, in-house diabetes credentialed pharmacists were given the authority to adjust basal/prandial insulin regimens by performing up to 20% dosing decreases. During the Covid-19 pandemic pharmacists were given additional authority to perform dosing adjustments up to 50% in either direction.

Objective: To compare the rates of hypoglycemic episodes between patients intervened on by credentialed pharmacists versus those managed solely by prescribing clinicians.

Methods: This retrospective, single-center, quasi cohort study included patients aged 18 or older with a basal/prandial insulin regimen. Patients with active insulin pumps, insulin infusions, or on non-formulary insulins were excluded. Patients intervened by non-credentialed pharmacists or endocrinologists were also excluded. The study was granted Investigational Review Board exemption. Data was collected from the electronic medical record. The primary objective was to evaluate the number of hypoglycemic events for inpatients managed by credentialed pharmacists compared to those managed by prescribing clinicians normalized to 1000 insulin days. Secondary outcomes included similar comparisons using level 2 and level 3 hypoglycemia.

Results: 200 patients were enrolled in each group. Blood glucose events >70 mg/dL per 1000 insulin days were 31 (95% confidence interval (CI): 24 to 72) for the pharmacist group and 48 (95% CI: 18 to 77) for the clinician group. Blood glucose events 40-53 mg/dL were 6 for the pharmacist group and 14 for the clinician group. Blood glucose events <40 mg/dL were 1 for the clinician group and 0 for the pharmacist group. Patients in the pharmacist group had .8 (95% CI: 0.45 to 1.32; p-.344) the odds of a hypoglycemic event than ones in the clinician group.

Conclusions: Patients for whom automatic insulin dosing adjustments were performed by credentialed pharmacists had a decreased odds of having a hypoglycemic event compared to patients where credentialed pharmacists were not involved.

The Effect of Single-Dose Aminoglycoside with a Beta-lactam for the Treatment of Gram-negative Bacteremia

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Introduction: Aminoglycosides possess activity against aerobic gram-negative organisms and are often used in combination with beta-lactam antibiotics for the treatment of infections caused by resistant gram-negative organisms. Studies evaluating the use of combination therapy in gram-negative bacteremia have not shown a clear benefit, however antimicrobial resistance was not prevalent in these studies. Aminoglycosides have also been associated with nephrotoxicity.

Objectives: The objective of this study is to determine if adding a single dose aminoglycoside to beta-lactam therapy would result in improved clinical outcomes, in addition to evaluating the incidence of acute kidney injury (AKI).

Methods: This study is a single-center, retrospective, cohort study including patients whom were 18 or older and treated for at least 24 hours for confirmed gram-negative bacteremia. The study has been approved by the Institutional Review Board. Patients that died within 24 hours of positive blood culture result, had concomitant gram-positive bacteremia or fungemia, or had an allergy to study medications will be excluded. Patients will be divided into two groups: those who received beta lactam or aztreonam monotherapy and those who received a beta-lactam or aztreonam in addition to a single dose of an aminoglycoside within 24 hours of positive blood culture. The primary endpoint is infection-related 30-day mortality per electronic medical record documentation. Key secondary outcomes include incidence of AKI and time to improvement of AKI. Data will be analyzed using Chi square or Fisher's exact tests (categorical data), student's T test (continuous data), and descriptive statistics as appropriate. Baseline characteristics include age, sex, body mass index (BMI), indication, ICU admission at therapy initiation, baseline renal function, diagnosis of sepsis or septic shock. Patients will be matched 2:1 (2 in the monotherapy group to 1 in the combination therapy group) with matching based on age, Pitt Bacteremia score, and ICU admission at initiation.

Results: In progress

Conclusions: In progress

(Clinical) Pharmacy Services

Implementation of Student-Led Transition of Care Program for Patients Admitted for Chronic Heart Failure

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As the complexity of medication regimens increase there is subsequently greater risk for medication errors. This risk is further compounded during changes in a patient's level of care. Medication management during care transitions is thus of paramount importance and pharmacists and their extenders can play an integral role in providing optimal care during care transitions. Pharmacists can provide patient education on disease states and medications, self-management techniques, and ensure medication access that have potential to decrease negative patient outcomes. Transitions of care (TOC) models often target high risk patient populations such as, disease-state driven programs targeting conditions with high readmission rates, such as, chronic heart failure (CHF). The high readmission rate in CHF seen nationally is multifactorial in nature - lack of understanding of disease state, formulary issues, low health literacy, and complex medication regimens, highlighting the need for multidisciplinary efforts including pharmacy. At Mount Sinai West the pharmacy department was tasked with developing an inpatient TOC Program to meet the needs of the patient population of the institution while complying with available staffing resources. Based on resource levels, evidence-based TOC models, and hospital readmission data a student-led program for CHF was implemented. Sixth year pharmacy students serve as pharmacy extenders under the supervision of clinical pharmacist(s) in order to service a larger number of patients. CHF patients are identified using reports and once screened as eligible (new diagnosis or exacerbation) the service bundle is provided. The TOC pharmacy bundle includes: obtaining accurate medication histories, documenting counseling interventions, and following up with patient/pharmacy post-discharge to ensure any possible medication errors are identified and addressed. Metrics to measure impact of this new TOC model include patient satisfaction at baseline compared to post-discharge (survey questions), patients seen, medication reconciliations performed, errors identified, and post-discharge follow-up calls made to patients and pharmacies.

(Clinical) Pharmacy Services

Development and Implementation of an ASHP/ACPE Accredited Pharmacy Technician Training Program within an Academic Healthcare System

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Pharmacy technicians play a key role in a safe and compliant medication management process and are often the first line of defense against an error. The alarming number of medication errors underscores the importance of technician certification and promotion of standardized and robust training programs. Comprehensive training is also crucial due to expanding technician roles and career advancement opportunities. Advanced roles for technicians include opportunities to specialize in technology and analytics, purchasing and inventory management, specialty pharmacy, 340B compliance, sterile compounding coordination, and transitions of care. Lastly, hardships in maintenance of safe staffing levels during the pandemic have prompted health systems to seek innovative ways to train and retain qualified individuals. The NYU Langone Health Pharmacy Technician Training Program (NYULH PTTP) was established in 2016 as an employee career growth initiative as well as a pipeline for hiring qualified graduates into the health system. The program was built on the foundation of the American Society of Health-System Pharmacists (ASHP) and Accreditation Council for Pharmacy Education (ACPE) standards, incorporating didactic, simulation, and experiential learning throughout each twelve-week session. Didactic sessions include sterile and non-sterile compounding, calculations, medication safety, and regulatory compliance. The program includes experiential rotations in pharmacy service areas of outpatient, centralized and decentralized inpatient, investigational drugs, pediatrics, oncology, and ambulatory infusion. The program prepares graduates to pass the Pharmacy Technician Certification Exam (PTCE), a requisite for state registration and the ability to pursue career opportunities. The NYULH PTTP program was ASHP/ACPE accredited in 2019. Since the program's inception in 2016, we have graduated 28 students, of which 22 have passed the PTCE. Of the 22 graduates that have passed the PTCE, 16 were hired and on-boarded as technicians within NYU Langone Health.

Covid-19 and the administration of bamlanivimab, and bamlanivimab + etesevimab: a cooperative effort between a community cancer center and an urgen care facility

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Background: Goal of the Massachusetts DPH is to ensure equitable distribution of BAM to the most vulnerable at risk of poor outcomes from COVID-19 and to communities with the highest incidences of COVID-19. Hospitals should allocate available doses in a manner consistent with this guidance: 1. Patients who meet the EUA criteria; a lottery system will be used if supply is exceeded 2. Patients with comorbidities (high risk) tend to have worse outcomes when infected with SARS-CoV-2 3. BAM was approved under an EUA for the treatment of mild to moderate COVID-19 for those at high risk of progressing to severe disease (revoked 4/16/21). 4. BAM + E combo was approved under an EUA for the same patients and criteria, Southcoast Health entered into this relationship with DPH to provide this service to the southeastern MA population.

Methods: Patients identified based on algorithm using Social Vulnerability Index (SVI) and EUA criteria RNs screened cases for positive criteria using lottery priority and SVI Pulmonologists consented appropriate patients, ordered infusions, routed cases for final scheduling within window of treatment Experienced nursing staff from various Southcoast departments treated up to 6 patients per day Oncology pharmacies are uniquely experienced to prepare monoclonal antibodies (MABS) such as BAM and BAM + EDue to proximity of the Oncology pharmacy to the UC Center, pharmacy reviewed, prepared and delivered infusions to UC once patient was assessed by RNs

Results: First 152 cases: 7.2% inpatient admissions within 14 days13.8% ED/UC visits within 14 days2% inpatient admissions in 28 days5.9% ED/UC visits within 28 days. Two deaths during initial 152 cases.

Conclusions: Cooperative effort between the Cancer Center and Urgent Care led to positive outcomes for local COVID-19 patients. Southcoast demonstrated a 6% hospital admission rate for COVID-19 patients in the MAB program versus 26% admission rate overall for COVID-19 patients.

Evaluation of Vancomycin Loading Dosing in Community Care Emergency Department (ED)

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Background: Vancomycin loading doses are designed to shorten the time to therapeutic concentrations and should be used for critically ill patients with severe infections. Pharmacists can play a role in maximizing therapeutic potential by adjusting loading doses per protocol for appropriate indications.

Objective: Evaluate current vancomycin loading dose practices in the ED, based on indication and pharmacy intervention.

Methods: This was an IRB approved, retrospective quality improvement project of administered vancomycin loading doses in the ED from 5/8/21-11/8/21. Patient's renal function and weight were reviewed to determine loading dose per protocol if indicated. Indications requiring adjustment by pharmacy per hospital protocol including bacteremia, endocarditis, pneumonia, osteomyelitis, meningitis, febrile neutropenia, and sepsis. These doses were then analyzed further to determine if adjustment was completed and dosed per protocol.

Results: In progress

Conclusions: In progress

Determining the Effect of a Pharmacy-Led Educational Intervention on Provider Knowledge of Using SGLT-2 Inhibitors and GLP-1 Receptor Agonists Outside Type 2 Diabetes Mellitus

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Introduction: Originally SGLT-2 inhibitors (SGLT-2i) and GLP-1 receptor agonists (GLP1-RA) were used exclusively in T2DM. Now certain agents within these classes are preferentially recommended therapies for patients with certain comorbidities (HFrEF, ASCVD, CKD) or risk factors, even without T2DM. These agents may not be utilized to the fullest extent of their potential outside of glycemic control, thus warranting further provider education through a pharmacy-led intervention.

Objective: A pharmacy-led educational intervention on the appropriate use of select GLP1-RA and SGLT-2i in patients with and without T2DM will increase provider knowledge of FDA-approved indications in addition to T2DM.

Methods: After receiving IRB approval from United Health Services (UHS), in addition to consent from providers, research was conducted using an exploratory survey design. Cardiology, endocrinology, nephrology, and primary care providers were assigned a randomly generated identification number in order to retain anonymity and minimize bias. A pre-survey gathered baseline information and knowledge of GLP1-RA and SGLT2i. An educational intervention (concise video, a pamphlet handout, and printable charts) about approved indications of these agents was then distributed via email to participants. The primary outcome of a change in provider knowledge was assessed after the intervention using a post-survey. Survey responses were scored on a numerical scale, then analyzed using Mann-Whitney U Test and Wilcoxon Signed Rank Test to assess if a change in knowledge was achieved, where p<0.05 indicates statistical significance.

Results: A positive statistically significant difference in survey scores was observed for the SGLT-2i class, however there was no statistically significant difference in scores on the GLP-1RA questions.

Conclusion: Overall, data suggests a pharmacy-led educational intervention engages providers and promotes expansion of pharmacologic knowledge, specifically on the SGLT2i class. The results of this study warrant further targeted education on the GLP1-RA drug class.

Attainment of Anthropometry Measurements in Pediatric Patient Admissions

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Background: Timely anthropometric measurements in pediatric patients, notably height and weight, are essential for safe and effective medication prescribing. Weight is necessary as most medications for pediatric patients are weight based. Height is used to estimate glomerular filtration rate (eGFR) with the Bedside Schwartz Formula for children 1-18 years to determine the need for medication dose adjustment based on renal function. At our institution obtaining these measurements, particularly height, is often deprioritized.

Objectives: The objective of this quality improvement project is to assess the timely attainment of patient height in pediatric patients at our institution.

Methods: This retrospective chart review quality improvement project, which met exemption criteria for Institutional Review Board review, identified pediatric patients who were admitted to Upstate Golisano Children's Hospital from July 1st to 31st, 2021. The primary end point was to determine the proportion of patients whom a height was recorded within 24 hours of admission. Secondary end points included how many patients without a height recorded within 24 hours of admission were given medications that would have had renal dose adjustment or have the potential to cause nephrotoxic injury. Data were analyzed using descriptive statistics utilizing Excel(R) and Research Electronic Data Capture (REDCap) (R) software.

Results: Of the 399 patients evaluated 283 (70.9%) had a height recorded within 24 hours of admission. Of the 116 patients with no height recorded within 24 hours of admission 49 (42.2%) received at least one medication with the potential to need renal dose adjustment and 55 (47.4%) received at least one medication known cause nephrotoxic injury.

Conclusions: Over one month, approximately 30% of pediatric patients admitted to Golisano Children's Hospital did not have a height recorded within 24 hours of admission with many of those patients' receiving medications with the potential to require renal dose adjustment or to cause nephrotoxic injury.

Evaluation of the predictive performance and quantification of the inter-rater reliability of regression models to detect carbapenem-resistant gram-negative bacterial infections at the time of hospitalization

Corresponding Author: Lina Loaiza
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Purpose: Carbapenem-Resistant Enterobacteriaceae (CRE) are a significant concern for patients in healthcare facilities. CRE are difficult to treat because they do not respond to commonly administered antibiotics. It is vital to identify patients at increased risk for CRE infection to begin appropriate treatment promptly. This study aims to evaluate the predictive performance and inter-rater reliability of existing risk prediction models to help identify patients at risk and thus provide the basis for selecting timely appropriate antibiotic therapy.

Methods: This is an IRB-approved multicenter retrospective study. Patients included were adults (≥18 years) with positive Carbapenem-Resistant Enterobacteriaceae serology who had ≥ one admission to the Mount Sinai System from March 2018 to March 2020. Patients were excluded if they were under 18 years old or were not treated or considered colonizers despite positive serology. Significant risk factors for carbapenem resistance were entered into two different CRE prediction tool models to further compare models' performance. All statistical analyses were performed using the RÂ® software.

Results: 100 electronic medical records were reviewed, and data were collected. 30% of participants were females, 62% were older than 60, and the most common pathogen was Klebsiella pneumonia. Multivariable logistic regression and Area Under the Receiver Operating Characteristics Curve were used to establish and compare model performance to evaluate the predictive performance and quantification of regression models to detect inpatient CRE risk during hospitalization. Lodise T, et al. model has an AUROC close to 0.7, 70%, compared to Sullivan T, et al. that has an AUROC close to 0.5, 50%.

Conclusions: Results showed that the Lodise model is better able to differentiate CRE from Non-CRE infections compared to the Sullivan model. Future evaluation should include the evaluation of predictive performance, an increased sample size, and inter-rater reliability of existing prediction models.

Student-developed Infographics to Improve Health Literacy While Educating Patients on Effective Use of Medication Devices

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Introduction/Background: Health literacy is the degree to which individuals have the capacity to obtain, process, and understand basic health information needed to make appropriate health decisions. Limited health literacy puts patients at risk for adverse health outcomes. Printed patient education materials can exacerbate limited health literacy when written at a higher grade level than the average adult can read, leading many to disregard the information altogether. Use of infographics, or informational graphics, is an emerging concept being utilized in health promotion contexts to visually communicate complex ideas and improve the accessibility of health information.

Objective(s): To assess the educational value of pharmacy student-developed infographics on effective medication device use to optimize health literacy.

Methods: Eleven students enrolled in a Professional Development elective at Albany College of Pharmacy and Health Sciences received education about health literacy and its effects on safe medication practices. Students then collaborated in four groups to create an infographic on the use of one medication device (metered dose inhaler, insulin pen, blood glucose monitor, or EpiPen). Infographics were created using various software applications and were targeted toward patients with limited health literacy. Required information included the purpose, steps for use, expected outcome of device use, and two additional topics such as disease state monitoring or lifestyle modifications. A grading rubric was used to assess the value of the infographic in educating the target audience based on accuracy, completeness, use of plain language, and visual appeal.

Results: Of four group infographic submissions, 100% were accurate, visually appealing, and contained plain language, and 75% were complete based on inclusion of required information per the assignment.

Conclusion: Pharmacy students effectively developed infographics with educational value and potential to optimize medication device use among patients with limited health literacy. This lays the groundwork for application of these infographics as educational tools in future clinical practice.

Evaluation of The Brooklyn Hospital Center (TBHC) Strategies to Improve Healthfirst Medicare Patient's Adherence: A retrospective Study

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Medication adherence is essential, yet a challenge in medicare patients. Around 40% of older patients do not take their prescriptions as prescribed which burdens the healthcare system by around $100-289 billions annually. To improve medication adherence among healthfirst medicare patients, The Brooklyn Hospital Center has implemented two strategies, 90-day vs 30-day medication fill program and automated reminders, such as texts, emails, and phone calls program. The goal of the study is to evaluate different strategies adopted by TBHC to improve healthfirst medicare patient's adherence. This is a secondary analysis, retrospective cohort, observational study that examined healthfirst medicare patients reports regarding medication adherence. A total of 2,119 patients were screened, managing disease states such as blood pressure, diabetes and/or cholesterol, and dated from October 2018 to October 2021. 30-day fill gradually decreased from 47.1% to 14.86% in October 2018 to 2021, while the 90-day fill gradually increased from October 2018 to 2021 (50.82%, 82.17%, respectively). The 30-day percent PDC increased from October 2018 to 2021, while percent PDC of 90-day fill has decreased from October 2019 to 2021. The overall average PDC from October 2018-2021 has increased (88.43%, 92.86%, respectively). The number of years in the automated reminders program was positively correlated with adherence. The study found no direct correlation between the number of prescriptions prescribed to patients and their rate of adherence. However, an overall decrease in adherence was noted in patients who had more prescriptions. A total increase in percent adherence for all disease states. Diabetic medications were the most adherent among TBHC healthfirst medicare patients, followed by hypertension medications. Cholesterol, subsequently, has the least adherence as compared to other disease states. TBHC strategies were successful in increasing overall patient's adherence.

Validation of published risk predictive models for carbapenem-resistant Enterobacteriaceae (CRE) identification in hospitalized patients

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Introduction: Carbapenem resistant Enterobacteriaceae (CRE) infections are challenging to treat and often results in inadequate empiric antimicrobial therapy and delayed start of optimal therapy. This results in prolonged hospitalizations and increased mortality. Early and accurate prediction of CRE infections can help guide appropriate empiric anti-CRE treatment and improve patient care.

Objective: Evaluate the existing CRE risk prediction models to identify patients at risk and provide appropriate empiric antimicrobial therapy.

Methods: This is an IRB approved, retrospective, multi-center study conducted at three hospitals within the Mount Sinai Health System. First, literature review was conducted to identify CRE risk predictive models for validation. Adults (N=100) admitted from March 2018 to March 2020, with positive Enterobacteriaceae cultures and required treatment were included. Model predictors, baseline demographic, clinical and microbiology data was collected. Statistical analyses was carried out using RÂ® software.

Results: Out of the 100 patient evaluated, average age was 62 years with 69 males and 49 patients CRE positive. Average Charlson Comorbidity Index was 5.46. Multivariate logistic regression and true positive rate (TPR) and false positive rate (FPR) at different cut offs were looked at to compare model performance. For Yang model, at cutoff 1, TPR was 0.98 and FPR was 0.94. At cutoff 3, TPR was 0.65 and FPR 0.35. For Weston model, at cutoff 0.41, TPR and FPR were 1. At cut off 0.79, TPR was 0.27 and FPR 0.05. For Seligman at cutoff 0.32, TPR was 0.88 and FPR 0.71. At cutoff 0.38, TPR was 0.60 and FPR 0.45.

Conclusion: Of the three models assessed and looking at different cutoff values, Yang and Seligman model seem to better differentiate CRE and non-CRE patients. Future plans include, inter-rater reliability for each model and increase in sample size of the study. Aim is to select a model and optimal cut-off to identify patients at risk of CRE infection.

The Impact of Transitions of Care Pharmacists Have on Readmission Rates and Cost for Patients with COPD in a Community Teaching Hospital

Corresponding Author: Zoe Martin

Introduction: Transitions of care pharmacists (TOCP) aid in overcoming transitional challenges and enhance collaboration between different healthcare professionals, ensuring patients receive the best care. At Wilson Memorial Hospital, TOCP focus on disease states that have higher readmission rates, like COPD. TOCP service that is not available at every hospital and is beneficial in providing education and support to patients.

Objective: The object of this study was to examine the impact of interventions done by TOCP on admission rates for patients with COPD and the associated cost savings.

Methods: Data was retrospectively collected from patient's electronic records using EPIC. Patients were included if they were 18 years or older with a COPD diagnosis and documented TOCP interventions. Information collected on patients included: age, sex, race, cause of admission, diagnosis of COPD, asthma or both, TOCP interventions, and readmission within 30 days. There were a total of 66 patients seen by TOCP that were assessed but only 15 patients were used in in the readmission comparison. Patients seen by TOCP were compared to 108 patients admitted with COPD who were not seen by TOCP.

Results: There were a total of 417 interventions by TOCP. The most common intervention was personalized education. There was a 4.5% reduction of COPD readmission rates in 8-months and a potential 10-fold reduction in costs over 1-year with patients who were seen by TOCP versus patients who were not seen by TOCP (not statistically significant).

Conclusions: The impact of interventions by TOCP for patients with COPD was under-reported in the study since no interventions for patients admitted for any other reason besides COPD were accounted for in the comparisons. There is a trend toward decreased readmission rates for patient who were seen by TOCP versus patients who were not. Despite an increased focus on COPD readmission rates, there remains a need for improvement.

Systematic Review of the Safety and Efficacy of Estetrol Plus Drospirenone for Contraception

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Background: Estetrol is an estrogen derivative available as a combined hormonal contraceptive with the progestin, drospirenone, and has been FDA-approved for contraception. Data suggests that substitution of estetrol for ethinyl estradiol in contraceptives results in improved patient safety outcomes relative to peer drugs. The aim of this systematic review was to characterize the safety and efficacy of estetrol plus drospirenone compared to alternative contraceptives.

Methods: A systematic search was conducted of MEDLINE, Embase, and International Pharmaceutical Abstracts on November 10, 2021, using "estetrol" and relevant permutations. Records were retained if they were primary literature, conducted in adult human premenopausal patients, reported efficacy and safety outcomes related to contraception or ovulation, and published in English. Data screening and extraction occurred in duplicate, with discordance resolved by a third reviewer. Data was synthesized by study characteristics, patient demographics, and outcomes. RoB 2.0 and the ROBINS-I tools were utilized to assess risk-of-bias.

Results: The search identified 240 articles, 10 which met inclusion criteria. There were five randomized controlled trials, three quasi-experimental studies, and two uncontrolled studies. Two studies reported efficacy via the Pearl Index (PI); two used Hoogland scores; three reported on bleeding; three on return of menstruation or ovulation; two on endometrial thickness; six on metabolic and endocrine effects; and one on acceptability, user satisfaction, body weight control, and general well-being. In the two studies which reported PI, values were found to be 0.47 and 2.65 for typical use of estetrol plus drospirenone. Only one patient across all studies experienced a thromboembolic event.

Discussion: Data confirms estetrol plus drospirenone as a safe and effective hormonal contraceptive option for use in premenopausal women. Important risks of bias exist across the literature reviewed.

Other: The authors deny conflicts of interest. The study was neither registered nor funded.

Systematic Review of Evening Primrose (Oenothera Biennis) Preparations for the Facilitation of Parturition

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Background: The objective of this systematic review was to characterize the efficacy and safety of evening primrose (EP) for facilitation of parturition in peripartum persons.

Methods: A search of MEDLINE, Embase, International Pharmaceutical Abstracts, the Cumulative Index of Nursing and Allied Health Literature, and ScienceDirect spanning origin to April 6, 2021, sought records related to the efficacy and safety of EP preparations to facilitate parturition. Eligibility criteria required records with efficacy or safety outcomes reported for EP preparations; studied in peripartum women; available in English; and, identified as primary literature. Records were excluded if they were available as abstracts only. Data screening and extraction occurred in duplicate, with discordance resolved by a third reviewer. Data was synthesized by study characteristics, patient demographics, and outcomes. The RoB 2.0, ROBINS-I, and JBI-case tools were used to assess risk of bias.

Results: A total number of nine studies were acquired, including six randomized placebo-controlled trials, one case study, one observational retrospective study, and one cross-sectional study. Efficacy outcomes included Bishop scores and duration of labor during the different phases, with mixed results across the literature reviewed. Six of nine studies failed to provide statistically significant results in favor of EP over the comparator. Reported adverse events were generally mild and included increased blood pressure, decreased heart rate, pain, bleeding, nausea, and vomiting.

Discussion: Important risks of bias exist across the literature reviewed. Two of the studies had some concerns regarding risk of bias and an additional two studies had a critical risk of bias. Additional limitations included insufficient randomization and blinding, small sample sizes, and improper self-administration. The use of EP for parturition in peripartum individuals is not recommended. Further research is warranted before use during parturition or the peripartum period. Other: The authors deny conflicts of interest. The study was neither registered nor funded.

Systematic Review of Elderberry (Sambucus sp.) for the Treatment of Confirmed of Suspected Influenza: A Focused Evaluation

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Background: The 2018-2019 U.S. influenza season resulted in approximately 29 million illnesses, 380,000 hospitalizations, and 28,000 deaths. Available data of elderberry preparations - often used at home to prevent or treat viral respiratory infections - commonly commingle data from participants with respiratory symptoms attributed to undefined pathogens alongside those with confirmed or suspected influenza, potentially overestimating the efficacy of elderberry for influenza. The objective of this systematic review was to evaluate the degree to which elderberry-only preparations reduce the duration of illness for persons with confirmed or suspected influenza.

Methods: MEDLINE, Embase, and International Pharmaceutical Abstracts were searched on February 5, 2021, using all available permutations of "elderberry", limited to humans and English. Records were retained if conducted in persons with confirmed or suspected influenza infection; reported on influenza-related efficacy or safety outcomes; administered elderberry alone, excluding combination products and blends; and, were published primary literature. Data screening and extraction occurred in duplicate, with discordance resolved by a third reviewer. Data was synthesized by study characteristics, patient demographics, and outcomes. The RoB 2.0 tool was used to assess risk-of-bias.

Results: The search identified 160 records conducted in humans and published in English. Four randomized controlled trials met eligibility criteria. Three studies demonstrated varied but significant time to symptom improvement and cure for elderberry over placebo, but a fourth study - with the largest sample size to date and strongest methodology of the literature reviewed - demonstrated a significant delay to cure by 2.2 days with elderberry compared to placebo. Elderberry was well tolerated.

Discussion: All studies demonstrated low risk-of-bias. Conflicting results and scant data suggest elderberry supplements may not perform as well in persons with confirmed or suspected influenza as posited by prior investigators. Additional research is warranted.

Other: The authors deny conflicts of interest. The study was neither registered nor funded.

Evaluation of a Autologous Stem Cell Transplant Program Transition to Ambulatory

Corresponding Author: Jamie Chin-Hon

Background: Autologous stem cell transplant (aHSCT) is a therapy provided as a standard of care for multiple myeloma, but an option for patients with relapse/refractory lymphoma. In 2017, our institution developed a standardized stem cell transplant protocol including anti-infective prophylaxis and supportive care orders. In 2019, our institution merged with the NYU health-system, and in 2020, we began to transition eligible patients from the traditional inpatient aHSCT to an ambulatory care aHSCT.
Objective: A clinical oncology pharmacist has been involved to coordinate each of the inpatient and outpatient aHSCT, collaborate with the transplant physician, nurse navigator, and nursing, and help providing dosing recommendations and education. This project aims to share our experiences with our transitions. The primary outcome is to evaluate the incidence of febrile neutropenia. Secondary outcomes will measure progression free survival, overall survival, development of secondary malignancies, and evaluate maintenance or salvage therapies.

Methods: This is a retrospective, single institution, review of patients who have undergone aHSCT for multiple myeloma or relapse/refractory lymphoma. Patients will be evaluated prior to developing standardized protocols, during the use of standardized protocols, and the transition to treat and manage patients in the ambulatory care setting.

Results: in progress

Conclusion: in progress