**Transitioning from Dexmedetomidine Infusion with the Use of Enteral Clonidine**

*Presented by* **Cynthia C. Cheung**, PharmD, Yale New Haven Hospital, New Haven, CT
*Co-authors:* A. A. Ammar, G. E. Rouse, M. A. Ammar; Yale New Haven Hospital, New Haven, Connecticut

The prolonged use of dexmedetomidine (DEX) for sedation can result in withdrawal when the infusion is abruptly discontinued. Enteral clonidine (CLO) has demonstrated success in preventing withdrawal symptoms and facilitating discontinuation of DEX. Various CLO dosing regimens have been utilized for this indication. This study sought to describe the current practice of using an enteral CLO taper for DEX transition.

A retrospective chart review was conducted for critically ill adults admitted within the health system over two years. Patients were included if CLO was initiated for DEX transition and continued for ≥ 48 hours. The primary endpoint was to evaluate the efficacy of the CLO taper for DEX transition, defined as the discontinuation of DEX within 24 hours of CLO initiation, and without reinitiation of DEX within 24 hours of discontinuation (success). Secondary endpoints included mean time to DEX discontinuation following CLO initiation, mean DEX hourly rates 12 hours prior to CLO initiation, mean duration of DEX infusion, mean daily CLO dose, mean duration of CLO taper, rescue therapy use post-CLO initiation, and ICU/hospital length of stay. Safety endpoints included incidence of bradycardia, hypotension, and CLO withdrawal. Parametric, continuous data were analyzed using a Student’s t-test, and non-parametric, continuous data were analyzed using a Wilcoxon Rank Sum test. Significant variables identified in a univariate analysis and those suspected to clinically influence successful DEX discontinuation were included in a multivariate logistic regression.

Of 50 patients included, 27 (54%) successfully transitioned off of DEX within 24 hours of CLO initiation. No significant differences in baseline characteristics, adverse events, or outcomes were identified between the therapy success and failure groups. Success patients had significantly lower DEX rates 12 hours prior to CLO initiation; 0.45 mcg/kg/h vs. 0.7 mcg/kg/h, (p < 0.05). The median CLO dose on day 1 of therapy was higher (0.3 mg) in the success group compared to the failure group (0.2 mg). Multivariate analysis revealed DEX rates 12 hours prior to CLO initiation significantly impacted likelihood of success [OR 0.95 (95% CI 0.92 – 0.98); p < 0.05].

Enteral CLO is an effective and safe therapy to facilitate the discontinuation of DEX. Patients receiving higher rates of DEX in the 12 hours prior to CLO initiation may require higher initial doses of CLO for successful transition. Further studies to identify the optimal CLO taper regimen are warranted.

**continued ⮷Phenobarbital fixed-dose schedule compared with a lorazepam-based intensive care unit symptom-triggered alcohol withdrawal protocol**

*Presented by*  **Lynne Germaske**, PharmD, VA Connecticut Healthcare System
*Co-authors*: K. Akgün, B. McGill; VA Connecticut Healthcare System, West Haven, CT

**Study Objective**
Alcohol withdrawal syndrome (AWS) results from down-regulation of central nervous system gamma-aminobutyric acid (GABA) receptors and up-regulation of glutamate receptors, both features resulting from chronic alcohol use. Phenobarbital, suppresses glutamate activity and enhances GABA activity while benzodiazepines only stimulate GABA receptors. We compared outcomes associated with using a weight-based, fixed-dose phenobarbital versus lorazepam-based symptom triggered protocol in AWS.

**Methods**
We conducted a single-centered retrospective chart review for patients admitted to the medical intensive care unit (MICU) for AWS during two times periods based on treatment protocols. We compared outcomes for patients that received lorazepam-based symptom-triggered (n=27 admissions for 21 patients; June 1, 2014 to December 31, 2015) vs. phenobarbital fixed- dose schedule (n=24 admissions for 18 patients; January 1, 2018 to June 30, 2019). The outcomes were complications related to AWS: intubation, pneumonia, initiation of any antibiotics after 24 hours of MICU admission, seizures, falls and propylene glycol toxicity; secondary endpoints include MICU length of stay (LOS) in hours, hospital LOS in days, and use of adjunctive AWS medications.

**Results**
Nearly all patients were men and race/ethnicity were not different between the two study groups. Patients in the lorazepam group were older (57 years, standard deviation (SD) 10.94) vs. the phenobarbital group (51 years, SD 8.5) p=0.03. The Acute Physiology and Chronic Health Evaluation [APACHE] II were relatively low and did not differ with treatment era, lorazepam group, 11.2 (SD 4.3) vs. phenobarbital group, 9.6 (SD 5.1) p=0.2. The primary safety outcomes were similar between the two groups. Median MICU LOS was longer in the lorazepam group, 68 hours vs. 36.5 hours in the phenobarbital group (absolute difference 43.5 hours, 95% confidence interval (CI) [12.7 to 74.2]; p=0.005). Median hospital LOS was longer in the lorazepam group, 12 days vs. 5.8 days in the phenobarbital group (absolute difference 6.8 days, 95% CI [3.4 to 10.1]; p=<0.001). Adjunctive agent use did not differ between groups.

**Conclusion**
In this single-centered study, use of a phenobarbital fixed-dose schedule treatment protocol for AWS appears to have at least similar safety outcomes compared with lorazepam alone. MICU and hospital LOS was significant reduce in the phenobarbital group. Future studies are needed to determine if these findings can be replicated in larger, multi-centered studies including more proportional representation of women.

**continued ⮷**

**Utilization of pharmacy student trainees to assist with patient discharge education on oral anticoagulation therapy.**

*Presented by*  **Allissa Long, PharmD,** John Dempsey Hospital at UConn Health, Farmington, CT
*Co-authors:* J. Czerwinski, A. Rizal, M. Kolodziej, E. Emonds, K. Chamberlin; John Dempsey Hospital at UConn Health, Farmington, CT; University of Connecticut School of Pharmacy, Storrs, CT; VA Boston Healthcare System, Boston, MA

**OBJECTIVE**
The 2019 Joint Commission National Patient Safety Goals highlighted the need to provide education to hospitalized patients and caregivers regarding anticoagulation therapy. To comply with safety standards, the pharmacy resident established a transitions of care (ToC) program that utilizes fourth-year pharmacy students to educate patients on oral anticoagulants prior to hospital discharge. The objective of this research was to implement and evaluate the impact of the ToC program on ED visits, readmission rates, and financial savings.

**METHODS**
The pharmacy resident developed standardized oral anticoagulant education and discharge protocols, trained fourth-year pharmacy students on protocols, counseling technique, and electronic medical record (EMR) documentation, and evaluated students via one written exam and at least one supervised counseling session before they were deemed self-sufficient to counsel. Data was retrospectively extracted and analyzed from the EMR and presented through descriptive statistics. Primary endpoints included 30- and 60-day readmission rates and ED visits, focused specifically on encounters related to anticoagulation therapy. The secondary objective was to analyze the financial impact of using pharmacy students to counsel.

**RESULTS**
From August 2019 to January 2020, 9 pharmacy students performed 76 discharge educations. Patients were 48.7% male with an average age of 71 and 28.9% were new to oral anticoagulant therapy. Of patients previously on therapy, 53.7% of patients had stated they had not previously received formal education on their anticoagulant. Formulary agents included in counseling were apixaban (65.8%), rivaroxaban (19.7%), warfarin (10.6%), and dabigatran (3.9%). The average counseling time was 11.3 minutes per patient. For 30-day ED visits and readmissions, 15/76 patients presented to the ED and 8/76 were readmitted to the hospital. Of those patients, 1/76 was readmitted for an anticoagulation related cause. For 60-day ED visits and readmissions, 22/76 patients presented to the ED and 19/76 were readmitted to the hospital. No additional patients were readmitted for an anticoagulant related cause. By utilizing pharmacy residents and students, the institution saved $1,435.41 of pharmacist cost in five months.

**CONCLUSION**
Integrating a ToC anticoagulation education program utilizing pharmacy students is feasible and effective. The pharmacy resident successfully designed and implemented a ToC program saving over $1400 in pharmacist cost. The results can be used to justify the sustainability of this ToC program at an academic medical center.

c**ontinued ⮷**

**Evaluation of cytomegalovirus prophylaxis in low and intermediate risk kidney transplant recipients receiving lymphocyte-depleting induction**

*Presented by*  **Hillary Stamps**, PharmD, Hartford Hospital, Hartford, CT
*Co-authors*: Kristin Linder, PharmD; David O’Sullivan, PhD; Faiqa Cheema, MD; Heather Kutzler, PharmD

**Objective**This study evaluates if choice and duration of Cytomegalovirus (CMV) prophylaxis based on donor (D) and recipient (R) CMV serostatus impacts the incidence of post-transplant CMV viremia in low (D-/R-) and intermediate (R+) risk kidney transplant recipients (KTR) receiving lymphocyte-depleting induction therapy.

**Methods** Adult D-/R- and R+ KTR receiving anti-thymocyte globulin [rabbit] (rATG) or alemtuzumab induction at our institution from 8/20/16-9/30/18 were evaluated through 1 year post-transplant. Patients were excluded if they were CMV D+/R-, received a multi-organ transplant, or received basiliximab. Historically, this population received 6 months of valganciclovir (pre-intervention group). After an institutional practice change, D-/R- patients received valacyclovir for 3 months and R+ patients received valganciclovir for 3 months (post-intervention group). Fisher’s exact test was used to compare categorical data and the Student’s t or Mann-Whitney U test was used for continuous data. Statistical significance was set at α=0.05.

**Results**77 records were evaluated total. 25 patients were D-/R-; 4 in the pre-intervention group and 21 in the post-intervention group. The remaining 52 patients were R+; 31 in the pre-intervention group and 21 in the post-intervention group. No D-/R- patients experienced CMV viremia. Among the R+ pre- and post- groups, there was no significant difference in viremia incidence (41.9% vs. 52.4%; p=0.573). There was no difference in the initial viral load between the R+ pre- and post- groups (median, IQR: <50, <50-91 vs. <50, <50-217; p=0.865), nor was there a difference in CMV related outcomes including CMV syndrome, tissue invasive disease, or hospitalization. Two patients in the pre- and three patients in the post- group experienced CMV viral loads > 1,000 IU/mL (p=1.000). Neither group showed a significant difference in the incidence of leukopenia or neutropenia; however, a trend toward increased incidence was seen in the D-/R- pre- compared to the post- group (75.0% vs. 23.4%; p=0.081). No D-/R- patients experienced rejection. Seven R+ patients experienced rejection in the pre group and one in the post group (p=0.122).

**Conclusions**A similar incidence in CMV viremia between the pre- and post-intervention groups suggests a more aggressive CMV prophylaxis may not be necessary in low and intermediate risk KTR receiving rATG or alemtuzumab . The trends toward reduced incidence of leukopenia or neutropenia and rejection in the post groups suggest potential benefits in limiting valganciclovir exposure.

**continued ⮷**

**Implementation of a Clostridioides difficile secondary prophylaxis protocol in an academic medical center**

*Presented by* **Megan Wein, PharmD,** Dempsey Hospital at UConn Health Center, Farmington, CT
*Co-Authors*: J. Aeschlimann, D. Banach, S. Johnston, K. Chamberlin, J. Barrack; John

**Purpose**
Patients with a history of Clostridioides difficile infection (CDI) have a high risk of recurrent CDI when receiving additional broad-spectrum antibiotic therapy. Recently-published research suggests that secondary oral vancomycin prophylaxis (OVP) might reduce risk for CDI in these patients. The purposes of this study are (1) to implement a structured protocol for identifying and treating high-risk patients with OVP, and (2) to compare the outcomes of patients who receive protocol-based OVP to the outcomes of a historical control group of patients who received broad-spectrum antibiotic therapy during inpatient care at an academic medical center.

**Methods**
We compared recurrent CDI rates in a prospective group of inpatients who received OVP concurrently with systemic broad-spectrum antibiotics versus a retrospective group of inpatients who did not receive OVP. We assessed for CDI recurrence by completing a chart review of patients at 90 days post antibiotic therapy. All patients with a recent history of CDI were eligible to receive oral vancomycin (125 milligrams twice daily) for the duration of inpatient antibiotic treatment with any of the following: cefepime, ceftazidime, piperacillin/tazobactam, ampicillin/sulbactam, ceftriaxone, clindamycin, meropenem, and/or levofloxacin. Secondary endpoints included incidence of vancomycin resistant Enterococci (VRE) and adverse effects of OVP.

**Results** Recurrent CDI occurred within 90 days in 0 of 10 (0.0%) patients who received OVP prospectively versus 4 of 15 (26.7%) patients who did not receive OVP retrospectively. No new VRE colonization or adverse events related to OVP were reported in either cohort of patients.

**Conclusions**
CDI secondary prophylaxis with oral vancomycin led to a decrease in recurrent CDI among hospitalized patients on systemic broad spectrum antibiotics. OVP is a promising advancement for preventing recurrent CDI in select patients, with little to no risk of VRE colonization or adverse events.