**NYS ACCP Annual Meeting Fall 2023**

**Poster Presentation Abstracts**

**Title:** First generation antipsychotic-associated serious adverse events in women: an analysis of a national pharmacoepidemiologic database.

**Authors**: Kenneth L McCall, PharmD, Bennett J Doughty, PharmD, Brian J Piper, PhD, Heeral Naik, Seraphine Bange, Emily E Leppien, PharmD

**Introduction**: The disproportionally low inclusion of women in trials of antipsychotic medications limits our understanding of drug safety.

**Objective**: The primary aim of this study was to evaluate five serious adverse events (AE) associated with first-generation antipsychotics (FGAs) among women relative to men through an analysis of FAERS.

**Methods**: We queried 24.6 million reports from 2000 to 2023 of cases involving FGAs. The study cohort consisted of chlorpromazine (n=3,317), fluphenazine (n=1,124), haloperidol (n= 16,709), loxapine (n=3,151), perphenazine (n=816), thioridazine (n=665), thiothixene (n= 244), and trifluoperazine (n=360). Cases of neuroleptic malignant syndrome (NMS), tardive dyskinesia (TD), Torsades de Pointes (TdP), agranulocytosis (AG), and cerebrovascular adverse events (CVAE) were identified. Reporting odds ratios (ROR) and associated 95% confidence intervals (CI) were calculated using a case/non-case analysis and logistic regression for each serious adverse event among women relative to men.

**Results**: A total of 2,857 serious AEs were evaluated in the study cohort (NMS=1,810, TD=434, TdP=260, AG=149, CVAE=204). Hospitalization and death were reported as outcomes in 1,762 (61.7%) and 413 (14.5%) of the reports, respectively. The ROR for women compared to men was 0.79 (95% CI, 0.71-0.87) for NMS, 0.83 (0.68-1.01) for TD, 1.21 (0.94-1.53) for TdP, 0.71 (0.51-0.98) for AG, and 0.91 (0.68-1.19) for CVAE. A secondary analysis revealed a higher odds in women compared to men of hospitalization associated with reports of TD (ROR=1.95, 95% CI = 1.29-2.94) and death associated with reports of AG (ROR=2.46, 1.15-5.24). A subgroup analysis of haloperidol AEs revealed an ROR for women compared to men of 1.67 (1.26-2.21) for TdP.

**Conclusion**: The subgroup analysis of haloperidol AEs revealed a significantly higher reporting odds ratio for TdP. Additionally, the secondary study findings suggest that women were more vulnerable to worse outcomes associated with certain AEs of FGAs.

**Title**: Bictegravir in the Elderly Living with HIV (BICEP): Impact of Polypharmacy and Multimorbidity

**Authors**: Thomas Sulli, Qing Liu, Sheung Ying Kwan, Jiachen Xu, Zilin Wang, Qing Ma

**Purpose**: Polypharmacy is a major challenges among the elderly living with HIV. We hypothesize that HIV-infected patients who switch from Elvitegravir/Cobicistat/ Emtricitabine /Tenofovir Alafenamide or Elvitegravir/Cobicistat/Emtricitabine/Tenofovir Fumarate to Bictegravir/Emtricitabine/Tenofovir Alafenamide (BIC/F/TAF) will experience less Potential drug-drug interactions (PDDI) which will translate to improved cognitive function and health-related quality of life measures (HRQOL).

**Methods**: This prospective, open-label, single-center study included people living with HIV switching to BIC/F/TAF . HRQOL and cognitive function was assessed at baseline, 12 weeks, and 24 weeks. The PDDI scores were defined as 3 (do not co-administer), 2 (require dosage adjustment or further monitoring), 1 (weak interaction), and 0 (no interaction). HRQOL measures was evaluated using the 20-question HIV symptom index (HSI). Cognitive function was assessed using the Montreal Cognitive Assessment test (MoCA).

**Results**: A total of 132 patients were enrolled with 97 being included in the polypharmacy cohort and 35 being included in non-polypharmacy cohort. The average number of PDDIs (SD) at baseline before switch was 1 (1) and 5 (4) for the non-polypharmacy and polypharmacy group, respectively. The average number of PDDIs (SD) at baseline after switch to BIC/F/TAF was 0.17 (0.38) and 1.12 (1.37) for the non-polypharmacy and polypharmacy group, respectively. The median baseline MoCA score (IQR) was 28 (27,29) and 27 (24,28) for non-polypharmacy and polypharmacy, respectively (p<0.001). The median baseline HSI score (IQR) was 11 (5,28) and 21 (10,37) for non-polypharmacy and polypharmacy, respectively(p<0.001).

**Conclusion**: Switching to BIC/F/TAF has resulted in a significant reduction of PDDI. Polypharmacy patients experienced significantly lower cognitive function and worse HRQOL outcomes. These findings suggests a new approach for DDI management, particularly important for those experiencing polypharmacy.

**Title**: The Influence of State Restrictions on Opioid Prescribing: 2006 – 2018

**Authors**: Luis Midence, MPH, Jacob J. Hayes, Pharm.D., Justin-Theodore Gondeck, Pharm.D., Kaitlin Moy, Pharm.D., MPH, Mei-Hsiu Chen, PhD, John D. Hogan, J.D., Leon E. Cosler, PhD;

**Purpose**: Reducing the overabundance of prescribed opioids is an important strategy to address potential opioid misuse. Many states have adopted a variety of legal or regulatory restrictions designed to reduce the number of prescribed opioids. There has been minimal publications evaluating these policies. The primary aim of this analysis was to measure the longitudinal effect of opioid restrictions on prescribing patterns at the state and regional levels.

**Methods**: State-specific prescribed opioids between 2006 and 2018 were extracted from CDC reports; population data was obtained from the U.S. Census Bureau; and opioid prescribing restrictions were extracted from published reports and state regulatory databases. Poisson regression models were fitted to assess the longitudinal relationship of statewide restrictions on opioid prescribing rates. Main variables incorporated into the poisson model were rude opioid counts by state by year, population for states by year, regional groups based on census groups, &amp; the implementation and duration of a prescribing law that limited opioid availability.

**Results**: Per capita rates of prescribed opioids peaked in 2012 at 86.2 per 100 population. Prescribing restrictions are associated with statistically significant decreases in opioid prescribing with the largest reduction during the fourth year after enactment of restrictions. Controlling for population and year, The model estimated that for every 100 opioid prescriptions in a state without restrictions, only 96 opioid prescriptions are expected in a state with restrictions in place (p<0.001).

**Conclusions**: Contrary to other research conducted over a shorter study period, we found that restrictions do reduce opioid prescribing, however a statistically significant change in rates may not be detectable until four years or more after restrictions are implemented. While accounting for the differences between states and regions we were able to illustrate modest, statistically significant differences in estimated opioid counts that can be correlated with opioid

prescribing restrictions.

**Title:** Urine Trouble: Alarming Multidrug Resistant Uropathogens in Persons with Diabetes Admitted from the Community

**Authors**: Alexander Leidolf, Rylee TePoel, Emily Bui, Diamond Orji, Aaron Lee, Benjamin Daigler, Raymond Cha

**Purpose**: Diabetes may predispose individuals to urinary tract infections prompting the need for increased antibiotic use. Therefore we performed a clinical microbiological evaluation to describe the potential relation between diabetes and antimicrobial resistance.

**Methods**: Multi-center retrospective comparative evaluation of hospitalized patients identified with a urinary tract infection (UTI) using ICD-10 codes. Of these patients those with diabetes were compared in a 2:1 fashion to those without. Patients included were ≥18 who received antibiotics for UTI ≤12 hours of presentation to the hospital with expected treatment for ≥3days. Exclusion criteria included negative urine culture and lack of antibiotic susceptibility. Data included comorbidities, length of stay (LOS), 30-day readmission, urinalysis, previous hospitalizations, antibiotics, long-term care residence, and recent surgery. Categorical antimicrobial resistances were associated to patient factors using regression.

**Results**: Data was collected on 345 subjects (230-diabetics and 115-nondiabetics) from three northeast US hospital centers. Majority of patients resided in the community (81.2%) prior to presentation with a mean age (years) of 67.4±13.8 and majority females (64%). The Charlson Comorbidity Index median was 4 for both groups. There were no significant differences in demographics and antibiotic use between groups. Common antibiotics were cephalosporins (46%) followed by fluoroquinolones (24%). The average LOS (days) was 10.1±9.4 and 6.1±8.1 for diabetic and nondiabetic groups respectively (p=0.22). Incidence of MDR pathogens was 41%vs.10% for diabetic and nondiabetic groups, respectively (p=0.011). The incidence of ESBL-producing organisms was 29% for diabetic and 7% for nondiabetic groups, respectively (p=0.04). While diabetes was not associated with an increased LOS (AOR 1.11,0.81-1.22), readmission rates were associated with resistance(AOR 3.77,2.88-4.56) and diabetes (AOR 1.99,1.44-2.71).

**Conclusions**: Patients with diabetes may be at an increased risk for developing clinically significant antimicrobial resistance. This data demonstrates an alarming percentage of antimicrobial resistant threats (i.e ESBL-producing organisms) in patients directly admitted from the community and has large implications on cautionary use of empiric antibiotics for hospitalized diabetic patients with UTI.

**Title**: Methenamine for Urinary Tract Infection Prophylaxis: A Systematic Review

**Authors**: Mei Li, Leon E. Cosler, PharmD, Ph.D., Elizabeth P. Harausz, M.D., MPH, Courtney E. Myers, M.D., Wesley D. Kufel, Pharm.D., BCPS, BCIDP, AAHIVP

**Purpose**: Urinary tract infections (UTIs) are highly prevalent and commonly affect many patient

populations including older adults. Recurrent UTIs can be particularly problematic and lead to

potential hospitalizations, and multiple antibiotic courses, and have a potential negative impact

on quality of life. To prevent UTIs, antibiotics are frequently used for prophylaxis; however,

antibiotic prophylaxis has notable untoward consequences including but not limited to potential

adverse effects and development of antibiotic resistance. Methenamine, which is an antiseptic

agent that was initially available in 1967, has re-emerged as a potential option for UTI

prophylaxis.

**Method**: Studies have evaluated the efficacy and safety of methenamine for UTI prophylaxis in

various populations, including older adults and renal transplant recipients. This systematic

review aims to evaluate these data through a literature search conducted in June 2023 that

identified 57 studies from Pubmed, Embase, and Cochrane Library, with 11 studies for inclusion.

**Results**: These studies demonstrated that methenamine reduces symptomatic UTI occurrence(s)

compared to pre-methenamine use or or improved clinical effectiveness overall compared to low dose antibiotic prophylaxis. Methenamine was generally well-tolerated overall and better

tolerated than comparator low dose antibiotics. Among renal transplant patients, methenamine

has demonstrated benefit in reducing UTIs and hospitalizations.

**Conclusion**: Although methenamine has been around for nearly six decades, clinical effectiveness and safety data have been relatively limited, but appears to be effective and

well-tolerated overall for UTI prophylaxis. Interest has largely re-emerged for this antiseptic

agent as an attractive alternative to low dose antibiotics in the era of antibiotic resistance.

Methenamine is an encouraging non-antibiotic option for UTI prophylaxis among certain patient

populations who experience rUTIs.

**Title**: Rising Cases of Drug-Induced Pulmonary Fibrosis: Analysis of the Food and Drug

Administration Adverse Event Reporting System (FAERS) Database, 2000-2022.

**Authors**: Kenneth L McCall, PharmD; Kelsey R Hennig, PharmD; Zachary T Abe; Danielle N Dattler; Karyssa L Hurd; Sophie L Portnoy; Zoey J Zagoria

**Purpose**: Pulmonary fibrosis (PF) is a severe, increasingly prevalent disease. We conducted a 23-year review of the FDA Adverse Event Reporting System (FAERS) to identify drugs commonly associated with PF.

**Methods**: In a retrospective review, we examined the FAERS database from 2000 to 2022, using

search terms “pulmonary fibrosis” and “idiopathic pulmonary fibrosis.” We excluded reports

involving patients under 18 or with unknown age or sex. Reports were sorted by generic drug

names and counted and trended over time using regression analysis.

**Results**: From 2000-2022, 17,520 (0.07%) of 24,095,935 adverse drug events were reported as

PF. Excluding patients under 18 and unknown age and sex. Our final dataset comprised 11,988

reports, with a mean patient age of 66.5 ± 13.1 years, and 52.1% were male. The number of

reports per year increased from 252 in 2001 to 1,049 in 2020, a 316% rise, with positive

regression trends (R 2  of 0.81 and 0.88 for linear and exponential regression, respectively). The

top five drug classes linked to PF were disease-modifying antirheumatic drugs (DMARDs,

39.4%), antineoplastic agents (26.4%), cardiovascular agents (12.6%), corticosteroids (4.6%),

and immunosuppressive agents (4.0%). The top 10 drugs associated with PF from 2000 to 2022

were methotrexate (11.3%), etanercept (8.1%), adalimumab (6.8%), amiodarone (6.6%),

infliximab (4.7%), rituximab (4.6%), hydroxychloroquine (4.3%), leflunomide (3.3%),

tocilizumab (3.2%), and abatacept (3.5%). Linear regression revealed significant increases over

time for most of these drugs, except amiodarone and infliximab.

**Conclusion**: FAERS data showed an exponential rise in PF reports over 23 years, particularly

linked to DMARDs and antineoplastic agents. While our study has limitations, it provides

valuable insights for further PF-related drug research.

**Title**: Readmission Rates in Patients with Heart Failure with Reduced Ejection Fraction on Guideline-Directed Medical Therapy at Hospital Discharge

**Authors**: Michelle Maj PharmD Candidate; Olivia Denny PharmD; Ashley E. Woodruff

PharmD; BCPS, Kevin Mills PharmD; BCCP, Maya R. Chilbert, PharmD, BCCP

**Purpose**: Guideline-directed medical therapy (GDMT) for heart failure with reduced ejection

fraction (HFrEF) includes renin-angiotensin-aldosterone system inhibitors (RAASi), beta-

blockers (BB), sodium-glucose cotransporter-2 inhibitors (SGLT2i), and mineralocorticoid

receptor antagonists (MRA). However, it is not always feasible to discharge patients on all four

classes. Therefore, the aim of this study was to assess patients discharged on three classes of

GDMT to determine an optimal combination.

**Methods**: A single-center, retrospective cohort of HFrEF admissions during March 2018-January 2023 was conducted. Patients discharged to hospice or with a serum creatinine ≥2 mg/dL (females) or ≥2.5 mg/dL (males) were excluded. A RAASi/BB/SGLT2i group (‘SGLT2i group’), was compared to a RAASi/BB/MRA group (‘MRA group’). The primary outcome compared 90-day HF readmissions. Secondary outcomes assessed adverse event rates. A time to event analysis using Kaplan-Meier curves was completed. Analysis was performed using SAS v9.4. with an alpha set at <0.05.

**Results**: A total of 172 patients were included, 85 in the SGLT2i group and 87 in the MRA

group. The SGLT2i compared to MRA group had a mean (standard deviation) age of 64.8 years

(14.5) versus 65.9 years (14.5; p=0.6091) and 32.9% (n=28) had a prior HF hospitalization

versus 36.8% (n=32; p=0.5973); respectively. In the SGLT2i group, 27.1% of patients had a 90-

day HF readmission compared to 17.2% in the MRA group (p=0.1208). This resulted in 1.32

readmissions per patient year in the SGLT2i group compared to 0.76 per patient year in the

MRA group (p=0.0691). Readmissions for adverse events occurred in 16.5% of the SGLT2i and

18.4% of the MRA group (p=0.7400).

**Conclusion**: Numerically lower rates of HF readmissions occurred in patients receiving three

classes of GDMT including an MRA compared to an SGLT2i, however this difference did not

reach statistical significance.