BACKGROUND

- Angiotensin converting enzyme inhibitors (ACEis), angiotensin receptor blockers (ARBs), and angiotensin receptor and neprilysin inhibitors (ARNIs) have documented efficacy in reducing mortality and hospitalizations for patients with heart failure (HF). However, there is little guidance for patients with HF who also receive hemodialysis.
- Heart failure medications also have a secondary effect of lowering blood pressure (BP). In conjunction with the BP lowering effect intrinsic of dialysis, patients can become severely hypotensive on certain heart failure medications.1
- Missing dialysis sessions can also cause accumulation of potassium in the body which when combined with some HF medications can drastically increase the risk of hyperkalemia.2

OBJECTIVE

- The purpose of this study was to observe if patients who had scheduled hemodialysis sessions were receiving optimal inpatient drug therapy for their heart failure.
- The primary objective of the study was observing how many patients with heart failure and hemodialysis received an ACEi, ARB, or ARNI.
- Secondary objectives include comparing incidences of hypotension, hyperkalemia, and hospital readmissions.

METHODS

Study Design

- Retrospective, observational, IRB approved, single-center review of patient medical and demographic data between admission and day seven of hospital stay.
- Inclusion Criteria: Cardiovascular-related admission (stroke, myocardial infarction, heart failure, hypertension, hypotension, atrial fibrillation), hospitalization > 48 hours, age 40-89, history or new diagnosis of heart failure, end stage renal disease on scheduled hemodialysis
- Exclusion Criteria: Patients on hospice or end-of-life care

Study Population

- Patients admitted to a 500-bed single hospital in Springfield, Illinois, myocardial infarction, heart failure, hypertension, hypotension, atrial fibrillation, hospitalization > 48 hours, age 40-89, history or new diagnosis of heart failure, end stage renal disease on scheduled hemodialysis

Study Measures

- The primary outcome was to determine the number of ACEi/ARB/ARNI given to patients with heart failure and on hemodialysis.
- Secondary objectives were to assess safety outcomes between ACEi/ARB/ARNI and other heart failure and blood pressure medications.
- Safety outcomes analyzed included: hypotension (at least one blood pressure reading < 100/60 mm Hg), hyperkalemia (K > 5.5), 30-day readmissions, and 30 to 90-day readmissions.

Data Analysis

- Data was analyzed and summarized using descriptive statistics

RESULTS

- From the study population, only 31% of patients received either an ACEi, ARB, or ARNI in the hospital.
- There are opportunities to optimize patients heart failure medications in dialysis while carefully balancing these safety concerns.
- ACE inhibitors seemed better tolerated compared to ARB/ARNI for patients with HF due to lower incidences of adverse events, however, the data comparing ACEi/ARB/ARNI vs no ACEi/ARB/ARNI did not show significant benefit in incidence of hyperkalemia, or hospital readmissions.
- A greater sample of patients in the future should be utilized to acquire more data.
- The study did not account for hydralazine or isosorbide heart failure medications. Medications were only assessed during the first 7 days and did not account for home medications.

REFERENCES