**Title:** Impact of Clinical Pharmacists on Sodium Glucose Co-Transporter-2 Inhibitors (SGLT2-I) Initiation and Continuation in a Heart Failure Population

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**Objective**: To evaluate the impact of clinical pharmacists on SGLT2-I initiation and continuation in outpatient heart failure clinics

**Study Design:** This was a multi-center, retrospective chart review study which used electronic medical records to assess the impact of clinical pharmacists on the influence of initiation and continuation of SGLT2-I therapy as part of guideline-directed medical therapy in heart failure clinics with embedded clinical pharmacists.

**Methods**: Subjects were identified in the electronic medical record by SGLT2-I prescriptions issued between January 1, 2021 and July 1, 2021 from Novant Health Presbyterian Heart and Vascular Institute Elizabeth Cardiology (HVIEC) clinic and Novant Health Forsyth Heart and Wellness (FHW) Heart Failure Clinic which had a 0.8 FTE clinical pharmacist practitioner (CPP) and a 0.2 FTE CPP embedded in their care team, respectively. Eligible patients included those 18 years of age or older with a diagnosis of heart failure with reduced ejection fraction (HFrEF) defined as a left ventricular ejection fraction (LVEF) ≤40%, prescribed an SGLT2-I agent indicated for the use of heart failure and have at least one follow-up encounter with the heart failure clinic after initiation of therapy. Baseline characteristics were collected by manual chart review and included patient demographics, baseline hemoglobin A1c (HgA1c) in patients with concurrent type 2 diabetes (T2D) diagnosis, LVEF, estimated glomerular filtration rate (eGFR), N-terminal-pro hormone BNP (NT-proBNP) and blood pressure. These values were also collected 3 months from SGLT2-I therapy initiation. The primary outcome of this evaluation was to compare the number and type of interventions made by CPPs that influenced initiation or continuation of SGLT2-I therapy between the two clinic sites. Secondary outcomes included change in hemoglobin A1c, LVEF, eGFR, NT-proBNP, and blood pressure from baseline. Data on the number of heart failure hospitalizations, cardiovascular (CV) events of myocardial infarction (MI), stroke, or death due to CV causes, incidence of genital mycotic infection or urinary tract infections (UTI), and recommendations for dose modifications of loop diuretics were also collected after therapy was initiated.

**Results**: Of the 103 charts reviewed, 89 patients were eligible for inclusion with 81 patients from HVIEC and 8 patients from FWH. Pharmacists made a total of 62 interventions in these patients, 59 interventions and 3 interventions from HVIEC and FHW, respectively. A majority of pharmacist interventions included providing medication samples to patients while waiting for patient assistance program (PAP) approval, assisting patients in filling out PAP applications, and providing free trial cards to obtain therapy at no pay for the first 30 days of therapy. Improvement in clinical markers, such like LVEF, eGFR, and NT-proBNP with modest effect on blood pressure were seen 3 months after therapy was initiated. There were 7 reported heart failure related hospitalizations that occurred in this population within the study period, none of which resulted in death. There were a total of 69 dose modifications of loop diuretics from the time when SGLT2-I therapy was initiated until the end of the study period, 67 from HVIEC and 2 from FWH. Sixteen patients discontinued therapy, 75% were due to medication related side effects.

**Conclusion**: Impact of a CPP in the heart failure clinic space to optimize the use of SGLT2-I initiation and continuation in patients with HFrEF was seen by the various interventions made by pharmacists. Additionally, there was improvement in clinical markers once SGLT2-I therapy was started until the end of the study. Despite the number of interventions, there was still a high percentage of therapy discontinuation. Future studies would benefit from expansion of the CPP service to include telephonic outreaches and education in a larger population size.

**Key words:** Heart failure, sodium glucose co-transporter-2 inhibitors, clinical pharmacist practitioners