**The Effect of Clinical Pharmacist Practitioners on Cardiovascular Outcomes in Patients Taking PCSK9 Inhibitors**

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**Abstract**

**Background/Purpose:** Elevated low-density lipoprotein (LDL) cholesterol is an established and modifiable risk factor for the development and worsening of cardiovascular disease. Currently, guidelines recommend the use of a HMG-CoA reductase inhibitor, or statin, at the maximally tolerated dose to lower LDL to goal. The PCSK9 inhibitor class of lipid lowering medication is widely used in patients who are unable to tolerate statin therapy, do not qualify for statin therapy, or are not at goal on maximally tolerated statin therapy. In addition, PCSK9 inhibitors have the ability to improve cardiovascular outcomes in patients with clinical atherosclerotic cardiovascular disease (ASCVD). At UNC REX, clinical pharmacist practitioners (CPPs) are embedded in cardiology clinics throughout the state of North Carolina. The CPPs practice via a collaborative practice agreement with the practice and supervising physician, enabling them to manage patients independently. The purpose of this study was to provide evidence as to the benefit that CPPs embedded in cardiology clinics have on cardiovascular outcomes in patients diagnosed with hyperlipidemia and/or clinical ASCVD on PCSK9 inhibitors. **Objective:** The primary objective was to evaluate the rate of major adverse cardiac events (MACE) – a composite of cardiovascular death, myocardial infarction, stroke, hospitalization for unstable angina, and coronary revascularization – between the date of PCSK9 inhibitor initiation and date of data collection in patients with hyperlipidemia and/or clinical ASCVD prescribed a PCSK9 inhibitor. Secondary endpoints included evaluation of the individual components of the primary outcome. **Methods:** This was a retrospective, multi-center study comparing cardiovascular outcomes in patients 18 years and older with a prescription for a PCSK9 inhibitor being managed by a CPP versus other provider (MD or APP) for the treatment of hyperlipidemia and/or clinical ASCVD within pre-specified North Carolina Heart and Vascular clinics. Patients who discontinued their PCSK9 inhibitor within 3 months of initiation were excluded. Descriptive statistics was performed on all variables, and group differences on the independent variables were estimated using T-tests, Chi-Square tests, or Fisher exact tests. All significance tests were two-tailed at p<0.05. Multivariable logistic models were also used for estimation of secondary analyses. **Results:** 181 patients were included, 133 (73%) in the lipid management by CPP group vs. 48 (27%) in the lipid management by MD/APP group. Overall, the primary outcome of MACE occurred in 55 participants, 35 (26%) in the CPP group and 20 (42%) in the MD/APP group. A trend toward reduction of MACE was observed in the CPP group, but was not significant (OR, 0.48; P=0.09). The most common event that occurred was coronary revascularization (12% vs. 15% in the CPP vs. MD/APP group, respectively) and hospitalization for unstable angina (11% vs. 19%, respectively). **Conclusion:** In patients with hyperlipidemia and/or clinical ASCVD, management of lipid therapy by a CPP displays a trend towards a decreased incidence of MACE. The results of this study warrant future studies of similar design to determine statistical significance.