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Title: *Impact of an Ambulatory Care Clinical Pharmacist on Type 2 Diabetes Mellitus Outcome Measures in a Family Medicine Clinic*

Abstract

Purpose

Multiple studies have demonstrated improved outcomes when a pharmacist is integrated directly in patient care and, as such, the American Society of Health System Pharmacists (ASHP) believes pharmacists should have a role in providing pharmaceutical care and enhanced drug therapy management.1 The purpose of this study was to discover a statistically significant difference in diabetes outcome measures in patients with type 2 diabetes mellitus that are being managed collaboratively with a board-certified ambulatory care clinical pharmacist in a family medicine clinic.

Methods

Following Institutional Review Board approval, a retrospective, single center electronic health record review was performed for dates of service 2/1/2017 to 11/20/18. This Service involved enhanced drug therapy management by a board-certified ambulatory care clinical pharmacist, who had a standing order set with the physicians in the HSHS Medical Group family medicine clinic located in Shiloh, Illinois. A total of 75 patients were reviewed for this study. Limited demographic information, including, age and race were collected. Clinical endpoints including, baseline and final HbA1c, American Diabetes Association (ADA) recommended immunization status pre- and post-PharmD Service care, ADA recommended labs pre- and post-PharmD Service care, including fasting lipid panel, urine albumin to creatinine ratio, TSH and vitamin B12 were also collected. The primary outcome of this study was the average HbA1c reduction

while under the care of the PharmD Service. Secondary Outcomes looked at adherence with ADA recommended immunizations, ADA recommended annual lab and disease progression monitoring, cholesterol reduction and whether race affected any of the outcomes.

Results

With regard to the primary outcome, average HbA1c was statistically significantly decreased while under the care of the PharmD Service. Average HbA1c was decreased from 10.33% at baseline prior to intervention with the PharmD Service to 7.938% after PharmD Service intervention (CI 7.365-8.511; p-value= 0.000). When looking at the impact of race, HbA1c reduction was statistically significant in both African American patients (from 11.725% to 8.25%; p-value= 0.000) and Caucasian patients (from 9.609% to 7.824%; p-value= 0.000). However, the African American group had a greater reduction in HbA1c (3.475%) than the Caucasian group (1.785%). The African American population HbA1c was higher at baseline than the Caucasian counterpart (11.725% vs. 9.609%). ADA recommended immunizations were also significantly increased in the overall patient population while under the care of the PharmD Service. Pneumovax, Prevnar13, the Hepatitis B series, tetanus, diphtheria, pertussis vaccine (Tdap)/ tetanus, diphtheria vaccine (Td) and the influenza vaccine (p-value < 0.003 for all vaccinations) all saw positive changes in the percentage of vaccines received.

Conclusion

This study demonstrated the statistically significant impact of a board-certified ambulatory care clinical pharmacist providing collaborative drug therapy management for the treatment of type

2 diabetes mellitus in a family medicine clinic. Not only was this impact demonstrated with improved disease control via the significantly reduced hemoglobin A1c in both African American and Caucasian populations, but also in the application of the American Diabetes Association recommended disease state management regarding immunization and disease progression and complication monitoring.