Impact of Pharmacist-led Employee Health Screenings on Cardiovascular Health

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Introduction and Background

According to the American Heart Association (AHA), approximately 121.5 million adults in the United States have some type of cardiovascular disease and many of them are unaware of it.[1] Early detection and management of the underlying causes of cardiovascular disease such as hypertension, hyperlipidemia and tobacco use are key in its treatment. The Asheville project was monumental in demonstrating the benefit of pharmacist intervention in patient outcomes. Community-based pharmacists provided services such as chronic disease education, clinical assessments, monitoring and collaborative drug therapy management. Results of the Asheville project demonstrated significant improvements in the health of study participants with type 2 diabetes – more than 50% of study participants displayed hemoglobin A1c improvements at each visit with their community-based pharmacist. Additionally, more than 50% of participants showed improved lipids at every measurement.[2]

A small chain of community-based pharmacies in northwest Missouri performed baseline screenings to patients allowing the pharmacists to stratify their patients into different categories of importance. Patients could fall into one or more of the following focused groups: cholesterol, hypertension, diabetes and weight monitoring. After stratification, the patients met with a pharmacist coach every one to two months for one year. Together the pharmacist and study participant created goals that were discussed and assessed at each visit. Each meeting also involved disease state education and monitoring via physical assessment. This study demonstrated significant improvements in both cardiovascular risk factors and health related quality of life, and study participants were satisfied with the wellness program.[3]

The Atherosclerotic Cardiovascular Disease (ASCVD) Risk Estimator was created by the American College of Cardiology (ACC) in 2013. This tool was designed to facilitate discussion between health care providers and their patients about lowering cardiovascular risk. The risk estimator utilizes patient age, gender, race, systolic blood pressure (SBP), total cholesterol (TC), high-density lipoprotein (HDL), patient history of diabetes, and whether the patient is on treatment for hypertension to calculate either a 10-year or lifetime risk of an ASCVD event. Additional information that can help individualize advice for the patient is diastolic blood pressure (DBP), low-density lipoprotein (LDL), and if the patient is on a statin or aspirin therapy. Based on patient specific parameters, the ASCVD Risk Estimator provides either a 10-year and/or lifetime risk of a cardiovascular event (i.e. heart attack or stroke).[4]

Despite these studies, gaps still exist regarding the longitudinal impact community-based pharmacists can have on cardiovascular risk in a large patient population. The goal of this study was to longitudinally evaluate the impact community-based pharmacists have on ASCVD risk for a large, diverse population.

Objectives

The objectives of this study are 1) to determine the change in cardiovascular risk from a baseline health screening and 2) to determine the percentage of patients potentially eligible for at least one clinical intervention aimed at improving cardiovascular health.

Methods

Study Site:

A large community-based pharmacy chain offers annual health screenings to employees. A sub-set of employees are required by their health insurance to seek a health screening at least once per year. The health screenings can be performed by community-based pharmacists in 15-minute appointments. Employees are offered insurance incentives for completing either a health screening at one of the community-based pharmacies within the organization or with a primary care provider.

Study Design:

This study is a retrospective analysis of health screening data from July 1, 2015 to June 30, 2020. Health screening data has been identified, including information necessary for ASCVD Risk Estimator Plus calculation:

- Health Screening Data:
    - Demographics: patient name, date of birth, gender, race
    - Labs: total cholesterol (TC)l, low density lipoprotein (LDL), high density lipoprotein (HDL), triglycerides, blood glucose
    - Vitals: systolic blood pressure (SBP), diastolic blood pressure (DBP)
    - Additional information: height, weight, body mass index (BMI), tobacco use status
- Prescription filling data:
    - Therapeutic class codes specific to diabetes and hypertension
    - Fills specific to any statin medication
    - Date of prescription filling

Cardiovascular risk was calculated utilizing the ASCVD Risk Estimator Plus for each patient and compared from their baseline screening to their most recent screening. Prescription filling data will be identified and utilized in two ways: 1) to assist in cardiovascular risk calculation (providing answers to the questions “On hypertension treatment?” and “History of diabetes?”) and 2) analyzing for potential gaps in care for pharmacist clinical intervention (i.e. eligible for statin therapy based on cardiovascular risk score). In final analysis, patient identifier information was de-identified.

Study population:

Patients were eligible for this study if they were at least 20 years of age on July 1, 2015, had completed a health screening with the community-pharmacist in three of the past five years and were an employee of the organization. Patients over the age of 79, those with incomplete health screening records and those with health screening parameters outside of prespecified ranges by the ASCVD Risk Estimator were excluded.

Data Collection:

This study received approval from the University of Kansas Medical Center Investigational Review Board (IRB) prior to collection of data from the large community-pharmacy chain.

Data Analysis:

All analyses will be conducted using SPSS v. 27 and an a-priori alpha of 0.05. Demographics will be assessed using descriptive statistics. Cardiovascular risk will be assessed for patients using repeated

measures ANOVA. The need for clinical interventions will be assessed between demographic groups (gender, smoking status, etc.) using chi-square.

Results

Baseline Demographics

A total of 10,001 patients were included and analyzed in this study. Female patients represented 50.3% of the population and the baseline median age was 47 years (interquartile range 37-55). At baseline, 15.4% of our patients utilized tobacco, 1.8% had a history of diabetes, 4.4% were receiving treatment for hypertension and 2.8% were on statin therapy. Baseline demographics are shown in Table 1.

Primary Outcome

The median baseline ASCVD risk was found to be 1.5% and increased by the final health screening to 1.8%. This was a statistically significant finding with a p-value of <0.001. Although this finding was statistically significant, the increase of 0.3% ASCVD risk is not a clinically significant finding. A statistically significant increase in HDL was also discovered from visit two to visit three (*P=0.03)*. There were no statistically significant changes observed in SBP, DBP, DMI, TC, LDL, triglycerides or blood glucose. Primary outcome results shown in table 2.

Secondary Outcome

Patients would qualify for statin therapy if their ASCVD risk score was >7.5% per ACC/AHA guidelines. Of the 1,187 patients who met this qualification, 1,025 (86.4%) of there were not receiving statin therapy based on the prescription filling history that was gathered for this study. This represents the number of potential clinical interventions the community-based pharmacist could have made in an effort to improve a patient's cardiovascular risk. Secondary outcome results shown in table 3.

Discussion

This retrospective analysis examined health screening data from a large patient population from within a large community-based pharmacy chain. As the health screenings are completed annually we were able to follow these patients longitudinally. It is important to remember that the health screenings performed by the community-based pharmacist are not meant to serve as or replace a diagnosis by a primary care provider. The findings of these health screenings should be validated at a primary care provider's office with appropriate laboratory equipment if cardiovascular disease or dyslipidemias are suspected. It was determined that there was a statistically significant increase in ASCVD risk from baseline to most recent health screening. Of note, the patient's first screening in the specified period is classified as "baseline" for our study. However, this may not be the patient's first health screening with a community-based pharmacist and may not represent their true baseline cardiovascular risk. We know that as patients age, their risk of an ASCVD event naturally increases. Because of the low baseline ASCVD risk, the increase from 1.5% to 1.8% could be contributed to the natural aging process and is not a clinically significant finding. Inconsistent record keeping could be a contributing factor to the low median ASCVD risk. Due to prespecified cholesterol and blood pressure parameters in the ASCVD Risk Estimator, patients with extreme readings who may have higher ASCVD risk were excluded. The biometric screening analyzer used to provide the cholesterol panel does not directly measure LDL,

instead it calculates this value utilizing the patient's triglycerides, HDL and TC numbers. If the patient has an elevated triglyceride value an "error" or "unable to measure" would be noted for the patient's LDL.

In the study published by DiDonto et al, community-based pharmacists met with their patient's multiple times during their yearlong coaching program. Each meeting between the patient and community-based pharmacist could last between 5 and 60 minutes. In contrast, patients included in our study only met with a community-based pharmacist one time each year for up to 15 minutes. In the 15-minute appointment, the pharmacist is tasked with taking the patient's blood pressure, obtaining a lipid panel, measuring the patient's height and weight,, recording the proper data and counseling the patient over their screening results in the end. The strictly timed schedule limits an in-depth conversation over a patient's screening information and ways to improve their health. The limited time spent with our community-based pharmacists could be one explanation behind the slight increase in ASCVD risk over time.

Lastly, the potential for clinical intervention is one last step that community-based pharmacists could be taking to improve the health of their health screening patients. Although community-based pharmacists are not diagnosing dyslipidemias with annual health screenings, communicating the findings and making recommendations for treatment are done via medication therapy management services within community-based pharmacies already. The 1025 patients identified in our study as qualifying for statin therapy but not receiving it represent the number of opportunities our pharmacist had to communicate with the patient's primary care team.

There were a few limitations identified during this study. Employees were given the option to obtain both health screenings and prescription filling services outside of the organization, therefore we were limited in our ability to capture this data. Another major limitation was discrepancies in record keeping across divisions, stores and pharmacists. For example, tobacco status is assessed via a patient completed questionnaire in a "yes/no" fashion. However, depending on discussion between the pharmacist and patient it may be discovered that the patient had previously used tobacco, therefore being listed as a "former" tobacco user. Additional record keeping discrepancies were found in patient race which is likely to have impacted the median ASCVD risk that was discovered. Because the employees are given the option to obtain both health screening and prescription filling services outside of the organization we have limited ability to capture this data. Additionally, the organization modified the health screening incentive strategy in the middle of the study period. Rather than providing incentives for patients who met certain criteria, the incentives were offered to any employee who simply completed an annual health screening or met with their primary care provider. Because of this, patient intentions may have changed, and their point-of-care screening outcomes were not a priority any longer. After the incentive change, patients could complete a non-fasting screening and still qualify for insurance incentives.

Conclusions

A statistically significant increase in ASCVD risk was discovered between all health screenings in this study. Although the increase was found to be statistically significant, it is not considered clinically significant as the median ASCVD risk at baseline was 1.5%.

References:

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