Adherence to Evidence-Based Hyperlipidemia Treatment Guidelines in Diabetic and CAD Patients Aged 40 and Older in an Outpatient Primary Care Clinic

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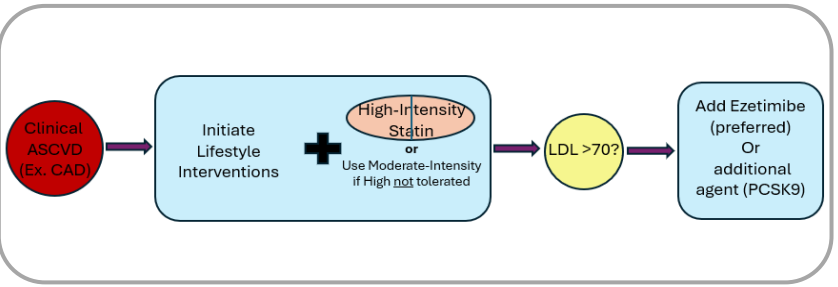
Objective

This study evaluates the adherence within a primary care setting to LDL targets from the 2018 American Heart Association (AHA) and American College of Cardiology (ACC) Guideline on the Management of Blood Cholesterol. The secondary objectives are to compare adherence rates between patients with type II diabetes mellitus (DM) or coronary artery disease (CAD), effectiveness across statin intensities, to assess differences between healthcare provider types, and to assess differences between insurances.

Introduction

Hyperlipidemia is an established contributor to atherosclerosis formation and a primary risk factor for cardiovascular disease (ASCVD) (1) which is the leading cause of death in the United States (2). Recent data from the CDC has found that approximately 86 million US adults have elevated cholesterol and only 54.5% receive treatment (3). This discrepancy in treatment is likely multifactorial and related to both provider factors and patient factors including social determinants of health. Lifestyle modifications and lipid-lowering medications remain the cornerstone of treatment. Statins are commonly prescribed and can be categorized as low-intensity, moderate-intensity, and high-intensity. In 2018, the AHA and ACC updated their guidelines regarding hyperlipidemia, which included LDL targets of ≤ 70 for patients with DM and CAD (as secondary prevention) (1). This study aims to evaluate adherence to those guidelines.



Methods

We performed a retrospective chart review of 500 patients including males and females age ≥ 40 with diagnosis of DM and/or CAD and serum LDL levels recorded between January and September 2025 in an outpatient family medicine clinic across multiple locations in Phoenix, AZ. Information collected included DM and/or CAD ICD10 diagnosis, most recent LDL levels, current lipid lowering medications, insurance type, healthcare provider type, and additional high-risk cardiovascular disease risk factors listed in the 2018 guidelines Table 4. Descriptive statistics, including counts and percentages, are reported. Inferential analyses were performed using chi-square tests and multivariable logistic regression. The threshold for statistical significance was set at p = 0.05 (two-tailed).

Results

Six charts were excluded for not meeting criteria of having diagnosis of DM or CAD. Among 494 patients, 256 (51.2%) were male, the mean BMI was 30.6, and 343 (68.6%) were age 65 or older. In total In patients with DM` alone 65% had LDL > 70, in patients with CAD alone 60% had LDL >70, and in patient with both DM and CAD 44% had LDL >70. Patients diagnosed with DM without complications were more likely to have LDL >70 (OR 2.21, p=0.012). Patients with DM with ophthalmologic complications were less likely to have LDL >70 (OR 0.41, p=0.003). Patients with DM but without CAD had higher incidence (65%) of LDL >70 compared to patients with both DM and CAD (43.4%) (p<0.001). Patients prescribed high-intensity statins showed less incidence (47.5%) of LDL >70 compared to other intensities (66.5%) (p<0.001). Patients managed by family medicine attending physicians were more likely to have LDL ≤ 70 compared to residents, mid-level providers, and cardiologist/vascular specialists (OR 0.548, p=0.004). Patients with Medicaid were more likely to have LDL >70 compared to other forms of insurance (OR 1.86, p=0.016). For those patients with additional risk factors, we were unable to identify a statistically significant difference in achieving LDL <70 for those patients considered very high risk.

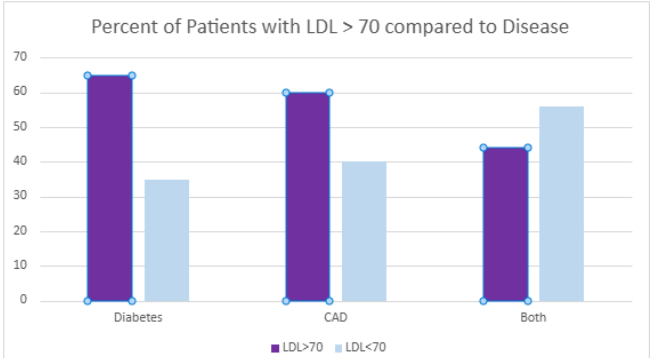


Figure 1: Graph depicting percentage of patients with LDL > or ≤ 70 compared across patients with DM, CAD, or both diagnoses. Incidence of LDL >70 in patients with both was 43.4% (p <.001).

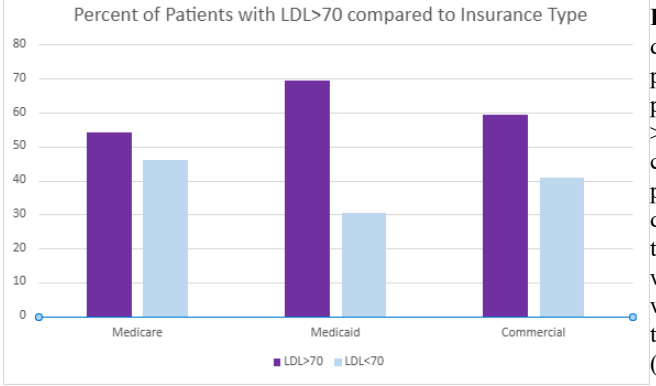


Figure 2: Graph depicting percentage of patients with LDL > or ≤ 70 compared across patients with different insurance types. Patients with Medicaid were more likely to have LDL>70 (OR 1.86, p=.016)

Conclusion

This study raises awareness of uncomplicated diabetic patients who may be at increased risk of developing CVD from not meeting guideline directed LDL targets. Differences in achieving LDL targets amongst DM v CAD patients may indicate an emphasis by providers to manage cholesterol more strictly in certain groups. Increased adherence to guidelines by Family Medicine attendings may be attributed to availability for follow-up compared to specialists and increased knowledge of current guidelines compared to residents and mid-level providers. Medicaid patients may achieve LDL goals less often due to social determinants of health.

References: 1. Grundy, S. M., et. al (2019). 2018 AHA/ACC/AACVPR/AAPA/ABC/ACPM/ADA/AGS/APHA/ASPC/NLA/PCNA guideline on the management of blood cholesterol. Journal of the American College of Cardiology, 73(24). **2.** Murphy SL, Kochanek KD, Xu JQ, Arias E. Mortality in the United States, 2023. NCHS Data Brief, no 521. Hyattsville, MD: National Center for Health Statistics. 2024. **3.** Arboleda, Vania, et. al. "The role of aspirin, statins, colchicine, and IL-1 inhibitors in prevention of cardiovascular events: a systematic integrative review" Journal of Osteopathic Medicine, vol. 124, no. 3, 2024, pp. 97-106.