

Impact of live medication therapy management on cholesterol values in patients with cardiovascular disease

Ricky Thumar and Kathy Zaiken

Abstract

Objective: To compare the impact of clinical pharmacist (CP) recommendations through a live, primary care-based, medication therapy management (MTM) protocol on low-density-lipoprotein (LDL) cholesterol in patients who have cardiovascular disease (CVD) with standard, chart-review MTM.

Methods: Patients with established CVD who were not at their LDL goal were identified and analyzed by either a chart-review MTM service or a live, one-on-one pharmacist-physician MTM service over a 6-month timeframe. For the chart-review MTM service, recommendations were communicated through an electronic medical record (EMR) that the physician and pharmacist had access to.

Results: Primary outcomes included mean LDL reduction from baseline, number of patients achieving their LDL goal, and percent of implemented CP recommendations. Mean LDL reduction from baseline in the chart-review MTM group and the live MTM group was 36 mg/dL \pm 23.2 mg/dL ($P = 0.001$) and 62 mg/dL \pm 28.3 mg/dL ($P = 0.001$), respectively. The difference between these two groups was statistically significant ($P = 0.001$). The chart-review MTM group had 30% of patients reach their LDL goal with 66.3% of CP recommendations implemented compared to 51.3% and 86.3% for the same parameters in the live MTM group ($P = 0.006$ and $P = 0.003$, respectively).

Conclusion: Although both MTM services provide a significant LDL reduction from baseline in patients with CVD, live MTM provides significantly greater LDL reductions, implemented CP recommendations, and goal attainment than chart-review MTM. Thus, live MTM services are more effective than chart-review MTM services, at least within the clinics that these protocols were assessed for the purposes of this study.

Keywords: Medication therapy management, primary care, cardiovascular disease, low density lipoprotein, cholesterol, lipid, clinical pharmacist.

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The American Diabetes Association notes that optimal diabetes management involves the incorporation of systematic quality improvement programs to facilitate the adoption of practice guidelines and advocating for case management programs that include pharmacists and other allied health professionals to help reach target goals.¹ Pharmacists have grown to play a prominent role in the primary care clinic, especially as it relates to chronic disease state management, reduction in disease progression, improvement in disease-related outcomes and goal attainment, reduction in health care costs, and reduction in total health plan costs.^{2–13} This evolving role can be characterized as pharmacist involvement in Medication Therapy Management (MTM).

Various approaches to pharmacist involvement in the primary care setting and MTM have been implemented including direct pharmacist-patient interactions, chart-review and physician-prompted MTM services, and collaborative therapy management. Minimal evidence exists to support the implementation of a live, one-on-one pharmacist-physician MTM service and, as such, the sole impact of pharmacist presence at the establishment of a patient care plan is not clearly defined.¹² However, it is believed that the live interaction between physician and clinical pharmacist (CP) that this study aims to assess will be of benefit in shaping the future of ambulatory/managed care MTM services.¹¹ The results

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Table 1. Study population and types of recommendations

Flow of patient screening	Live	Chart
Number of patients screened	146	151
Number of patients meeting inclusion criteria	103	106
Number of patients lost to follow-up	23	26
Number of patients included in analysis	80	80
Statin potency change (dose, agent, or both)	71.25%	68.75%
Assess compliance and obtain updated fasting lipid panel (FLP)	11.25%	12.50%
Initiate new agent ^a	16.25%	16.25%
Discontinue agent ^a	1.25%	2.50%

^aStatin, fibric acid derivative, cholesterol absorption inhibitor, bile acid sequestrant, niacin, fish oil, co-Q 10.

of this study will help contribute to existing knowledge by evaluating whether the inclusion of pharmacist intervention at the establishment of a cardiovascular disease (CVD) patient care plan yields better patient outcomes, reflected through changes in low density lipoprotein (LDL) values and subsequent goal attainment.

Objective

The purpose of this study is to determine the impact of a live CP intervention program on mean LDL reduction from baseline in patients with CVD as compared to standard CP chart-review MTM services.

Methods

In this prospective, multicenter, observational study, approved by the Institutional Review Board at MCPHS University, demographic information was extracted from the electronic medical record (EMR) used by Harvard Vanguard Medical Associates (HVMA) and Atrius Health. Patients were included if they had CVD (goal LDL less than 100 mg/dL) and an LDL greater than 120 mg/dL within 12 months of their upcoming clinic appointment, as long as their lipid pharmacotherapy was not addressed by a CP in any other manner. Patients were excluded if 1) no LDL value was reported within 6 months following the appointment, 2) no treatment plan was documented in the EMR, 3) nonadherence was documented in the problem list on the EMR, or 4) triglyceride levels were greater than or equal to 400 mg/dL.

Chart-review MTM was the standard type of MTM service provided by CPs prior to this study. Herein, CPs would receive monthly reports of patients with uncontrolled chronic disease parameters and upcoming clinic appointments. They would then perform a chart review, document potential recommendations in the EMR, and send a notification to the physician. After the clinic appointment with the physician, the CP would review the EMR once again to determine whether or not their recommendations were acknowledged. Subjective limita-

tions of this MTM protocol included 1) minimal live discourse between the pharmacist and physician, 2) lack of physician acknowledgement of CP recommendations, and 3) time-consuming work, especially when recommendations go unnoticed. These prompted the notion of a live MTM pilot program involving one-on-one pharmacist-physician meetings where the target population would be patients with CVD and poorly controlled LDL values. A population manager would compile a list of patients for specific physicians with whom CPs had set up individual one-hour meetings to establish collaborative plans of care in the EMR.

This study aimed to compare the pilot live program to the established chart-review program over a 6-month timeframe. Recommendations were made based on individual clinical experience and literature evaluations. Data from CPs involved with both programs only were collected, allowing them to serve as their own controls. Primary outcome measures included 1) mean LDL reduction from baseline between and within each MTM service, 2) number of patients achieving their LDL goal, and 3) percent of implemented CP recommendations. The secondary outcome measures addressed types of cholesterol-related recommendations made by CPs in each program. A subanalysis of the same primary outcomes was performed only on patients whose CP recommendations were implemented.

Based on data from a similar study, a mean LDL reduction of 40 mg/dL or more for the chart-review MTM and 60 mg/dL or more for the live MTM would be deemed statistically significant. This LDL difference of 20 mg/dL between groups would also be deemed statistically significant.¹² It was determined that 50 participants per group would allow for detection of statistical significance at the 5% level with 80% power.¹⁴ Table 1 displays the flow of patient screening for this study and reveals that 80 patients were included in each group. Baseline characteristics are summarized in Table 2 using frequencies/percentages or means (\pm SD). Statistical analyses performed on these data aimed to assess differences within and between study groups. Results were considered statistically significant if the observed level of significance was $P < 0.05$.¹⁵

Results

Types of CP recommendations are summarized in Table 1. The most common recommendation was statin potency change followed by initiation of a new agent. Table 2 summarizes baseline profiles and results for all patients included in the study as well as subanalysis results of patients with a recommendation that was ultimately implemented. The mean LDL reduction from baseline in the chart-review MTM group and the live MTM group was 36 mg/dL \pm 23.2 mg/dL ($P = 0.001$) and 62 mg/dL \pm 28.3 mg/dL ($P = 0.001$), respectively. This shows that both services provide effective LDL lowering in patients

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