The Burden and Management of Dyslipidemia: Practical Issues

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Abstract

The objective of this study is to describe briefly the burden of dyslipidemia, and to discuss and present strategies for health professionals to improve dyslipidemia management, based on a review of selected literature focusing on interventions for dyslipidemia treatment adherence. Despite the availability of effective lifestyle and pharmaceutical therapies for dyslipidemias, they continue to present a significant economic burden in the United States. Adherence to evidence-based guidelines for the treatment of dyslipidemias is unsatisfactory. The reasons for medication nonadherence are complex and specific to each patient. The lack of progress in achieving optimal lipid targets is caused by many factors: patient (medication adherence, cost of medication, literacy), medication (adverse effects, complexity of regimen), provider (lack of adherence to evidence-based practice guidelines, poor communication), and the US healthcare system (being focused on acute care rather than prevention, lack of continuity of care, general lack of use of an electronic health record). Combined interventions that target each part of the system have been effective in improving treatment adherence and achieving lipid goals. Patients, providers, pharmacists, and employers all play a role in management of dyslipidemia. No single approach will solve the complex issue of improving dyslipidemia management. The required lifestyle changes are known and effective medications are available. The challenge is for all interested parties—including nurses, nurse practitioners, doctors, pharmacists, other health care professionals, employers, and health plans—to help patients achieve behavioral changes. (Population Health Management 2012;15:302–308)

Introduction

Dyslipidemias are associated with numerous medical conditions including heart disease, peripheral vascular disease, and stroke. The health and economic outcomes associated with dyslipidemias are well documented. A MEDLINE literature review in 2007 identified more than 43,000 papers about dyslipidemia, more than 700 of which focused on its economic burden. Cardiovascular disease is responsible for more than 800,000 deaths each year in the United States at an estimated $286 billion in direct and indirect costs. About 16% of the adult US population has a total cholesterol level ≥240 mg/dL; 45% of adults have a total cholesterol level ≥200 mg/dL. The current guidelines for optimal cholesterol levels include: low-density lipoprotein cholesterol (LDL-C) <100 mg/dL and total cholesterol <200 mg/dL. If patients are at very high risk for coronary heart disease (CHD), an LDL-C goal of <70 mg/dL is recommended.

The expert panel of the National Cholesterol Education Program (NCEP) recommended initiating therapeutic lifestyle changes if LDL-C is above goal and adding HMG-CoA reductase inhibitor (statin) and other lipid-lowering medications for patients who have not achieved LDL-C treatment goals through lifestyle modifications. Despite the estimate that a 10% decrease in total cholesterol levels might reduce the incidence of heart disease by 30%, less than half of those who qualify receive lipid-lowering treatment for heart disease. Furthermore, the Healthcare Effectiveness Data and Information Set (HEDIS) benchmarks for managed care organizations (MCOs) include 2 measures for cholesterol management. In 2009, 59.2% of commercially insured health maintenance organization patients with a diagnosis of ischemic vascular disease had achieved LDL-C levels <100 mg/dL; only 47.0% of patients with diabetes had achieved LDL-C levels <100 mg/dL.

What role can health professionals play in achieving hyperlipidemia goals? A simulation study of the effects of HEDIS performance measures on different health outcomes found that if all MCOs met their hyperlipidemic targets at the median level, approximately 1.9 million myocardial
infarctions and 0.8 million strokes could have been prevented over 10 years.\(^8\) Although the current review should not be considered comprehensive of the entire body of literature surrounding dyslipidemia management, its purpose is to discuss and present strategies for health management professionals to help improve dyslipidemia care.

**Strategies**

**Lifestyle changes**

Several studies have demonstrated the benefits of diet and exercise in reducing LDL-C and cardiovascular events in patients with and without CHD.\(^7\)-\(^17\) All adults should be encouraged to adopt a healthy lifestyle, but these factors are even more important for patients with elevated LDL-C levels.\(^5\) These dietary and lifestyle modifications include adopting healthy eating habits (limiting sugar and refined carbohydrates, and increasing fruit, vegetable, and whole grain consumption), not smoking, maintaining a healthy weight and an optimal waist circumference, and engaging in regular physical activity.\(^2\),\(^18\) If lifestyle modifications are unsuccessful in achieving optimal lipid levels, lipid-lowering therapy may be necessary.\(^5\),\(^19\)

However, it appears that clinicians may be discounting the benefits of lifestyle behavior changes prior to initiating pharmaceutical treatment. In one study, 79% of study patients wanted to try changing their diet prior to starting a statin but only half reported being given that opportunity.\(^20\) Of those who had the opportunity to modify their diet, 43% felt they were not allowed sufficient time to change their behavior before being prescribed a statin.\(^20\) Categorizing patients based on risk factors into low, intermediate, and high risk can provide physicians with guidelines about which patients should attempt to make lifestyle changes prior to initiating drug therapy.\(^21\)

**Pharmaceutical therapies**

Although clinical trials repeatedly show that statins are effective in lowering LDL-C levels,\(^22\)-\(^28\) actual clinical experience does not always match these results.\(^29\)-\(^35\) Medication adherence, failure to titrate to the most effective dose or medication, inadequate follow-up, disparities in screening and prescribing, and lack of patient motivation all have been hypothesized as reasons for the gap in achieving LDL-C goals between what is reported in clinical trials and actual results observed in physician medical practices.\(^36\)-\(^39\)

The NCEP has acknowledged\(^5\) that achieving the <70 mg/dL LDL-C goal will be difficult for many patients, particularly using statin monotherapy.\(^40\) However, the effect and risks of combining different types of cholesterol-lowering medications (statins with bile acid sequestrants, or statins with other lipid-lowering agents) is not well understood by physicians,\(^41\) despite studies demonstrating their potential safety and efficacy.\(^42\)-\(^46\)

The managed care community is familiar with the poor medication adherence rates associated with many drug classes and lipid-lowering therapies in particular.\(^47\) The World Health Organization estimates an average medication adherence rate of approximately 50%.\(^48\) Nonadherence is associated with increased hospitalizations and treatment costs as well as loss of productivity and premature death.\(^49\) Discontinuation rates among patients who initiate statin therapy range from 15% to 78% depending on the study location, sample demographics, and length of follow-up.\(^50\),\(^51\)

**Predictors of nonadherence**

Studies have found that poor medication adherence is associated with younger patient age, female sex, fewer comorbidities, no cholesterol level monitoring after statin initiation, depression, low perceived risk of myocardial infarction, misconceptions about treatment duration,\(^20\),\(^52\) feelings about medical providers and belief in the benefit of the medication,\(^53\) number of other medications being taken,\(^54\) and prescription size.\(^54\),\(^55\) Higher co-payments also have been found to be associated with lower levels of statin adherence and prescription abandonment.\(^52\),\(^56\)-\(^60\) Patients treated to a target cholesterol level are significantly more adherent to statins and have better cardiovascular outcomes than those treated by a “treat and forget” method.\(^51\)

**Suggestions for Population Health Management**

How can health management professionals help to reduce the burden of dyslipidemia among US adults? Is the lack of progress in reducing LDL-C levels because of the patients (medication adherence issues, cost of medication), the medications (adverse effects, complexity of regimen), the providers (lack of evidence-based practice and follow-up, poor communication), or the system (focused on acute care rather than prevention, lack of continuity of care)?\(^63\)-\(^65\) The National Committee for Quality Assurance instituted a HEDIS measure for MCOs that differentiates between the management of individual patients (LCL-C goal <100 mg/dL) and a performance measure used to evaluate the care of a specific population of patients who have had a major CHD event (LDL-C goal <70 mg/dL).\(^66\) Researchers also have proposed other measures that can help MCOs to benchmark their quality of care of dyslipidemia. These include expanding the population defined in HEDIS to include more candidates for therapy, determining how many of those patients are on lipid-lowering medications, and using the appropriate LDL-C goal values from the NCEP recommendations.\(^67\)

**Providers**

Providers must stay current on the most recent evidence-based medicine guidelines for lipid management, such as the identification of those patients at risk for cardiovascular events and the use of appropriate lifestyle and medications to achieve lipid treatment goals.\(^68\),\(^69\) Only about one third of patients who receive treatment are achieving their LDL-C goal, and fewer than 20% of CHD patients are at their target LDL-C level.\(^2\) Results from other studies suggest that physicians are not titrating the dose of lipid-lowering medications to reach the optimal cholesterol goal.\(^77\),\(^78\) Providers must be held to the most current evidence-based practice guidelines for the appropriate use of statins, including cautions, contraindications, and safety monitoring of various parameters during treatment.\(^71\) Health care provider strategies to improve adherence might include limiting the number of medications prescribed for a patient when possible.\(^72\) Earlier and more frequent follow-up visits also have been shown to improve adherence to statins.\(^73\) In this regard,
pay-for-performance initiatives have had some mixed but promising results.7,24 Electronic medical records also show promise in improving management of dyslipidemia.7,25,26

Nurses, nutritionists, and pharmacists can play an important role in a collaborative approach to dyslipidemia management. Effective nutrition education can improve blood lipid levels,7,27 while nurses and other members of the health care team can provide effective case management services to individuals, particularly those dealing with multiple risk factors for heart disease.7,27,28 Pharmacists are knowledgeable about medications, treatment indications, dosing, safety issues, side effects, and contraindications. They are highly accessible at the point of medication dispensing and can improve medication adherence through education and face-to-face counseling.81 In some cases, pharmacist-managed clinics have been shown to improve dyslipidemia management and goal attainment compared with groups managed by primary care physicians.82–84

Patients

Patients also need better education that should include addressing their individual health literacy. Those who are knowledgeable and participate in their health care decisions have better behaviors and outcomes.85 Cardiovascular patients have been shown not only to have poor adherence to medication regimens and diet recommendations, but also poor attendance at follow-up appointments.86 One large review of statin adherence interventions found that, in general, personalized and patient-focused interventions were the most cost-effective.86 Research supports the use of techniques to improve patients' belief in their ability to follow medication regimens.87 Moreover, patients who are made aware of the potential adverse effects of medication may have appropriate expectations and increased adherence.88 In one study, LDL-C, exercise, and dietary goals were achieved by significantly more patients who received nurse-mediated care compared to patients who received only enhanced primary physician care.8,9 Preactivating patients prior to physician visits may be an important strategy. Written materials, telephone consultations, or pre-visit discussions with a care manager may enable patients to be more assertive and involved in medical care visits.88 Expecting all patient education and patient concerns to be discussed in the traditional 15-minute physician visit is a setup for failure.63 A technique called motivational interviewing may help patients resolve any ambivalence they may feel toward their prescribed treatment plan.90

Pill splitting has been promoted as a possible strategy to improve patient adherence when medication cost is a barrier.91–95 Potential problems with pill splitting include inaccurate dosing, loss of medication due to fragmentation, and patient dissatisfaction, which could lead to nonadherence.91,96,97 Technology also may be used to improve adherence. The Electronic Medication Management Assistant is a computerized medication dispenser that patients can use at home.98 It works in conjunction with an electronic medication administration record, which allows medication use to be supervised remotely by health care providers who can take action when the patient is nonadherent. Electronic caps, also known as microelectronic monitoring systems (MEMS), have been used in medication adherence research. Showing patients the results from their MEMS output and discussing the results may be effective in increasing medication adherence.99 A variety of other technologies are available to aid with medication adherence, including smart phone reminders, tracking applications, and videophone technology.

Pharmacy benefit managers

Organizations can work with their pharmacy benefit providers to ensure formulary access to the appropriate medications for dyslipidemia.68 These medications frequently have higher co-pays because of the expense and widespread use of statin drugs; however, it may be a cost-effective strategy in terms of improved adherence and effectiveness to lower copayments for selected medications for certain patients.100,101 One study demonstrated that a co-payment reduction was associated with a 7% improvement in statin adherence.102 Sokol and colleagues showed that the increased cost for medication to treat dyslipidemia was more than offset by the savings in health care cost from a reduction in hospitalization expenditures that resulted from improved adherence.103 Community-based studies utilizing pharmacists to provide patient education have been successful in improving medication adherence and clinical outcomes for patients.104,105

Employers

Employers also have a vested interest in improving dyslipidemia management for their employees. One study found that, even among executives for whom medication cost should not be a barrier to medication adherence, only 68% of statin users were adherent.106 Worksite disease management programs commonly are used to improve the health and productivity of employees. Compared with usual care, both a worksite educational program and a small monetary incentive were successful in reducing LDL-C levels among employees.107 As the frequent payers of health care costs, employers can play an important role in benefit design and selection of health plans that have proven to be better at prevention-focused care. Pharmacy benefit plan design is an important tool to improve patient treatment and adherence. A literature review has indicated that as patient medication cost sharing increases, there is a correlation with reduced medication use but greater use of medical services, as well as increased health consequences for conditions such as dyslipidemia.108

Conclusions

A Cochrane Collaboration reviewed interventions to improve adherence to lipid-lowering medication.109 The reviewers concluded that adherence improvement interventions typically fall into one of 4 categories: simplification of drug regimen; patient information/education; intensified patient care such as reminder programs; and complex behavioral interventions such as group sessions. Results from the studies reviewed found that adherence rates changed from −3% to +25% as a result of the interventions.109 A combined intervention that targets both providers and patients also has been effective in increasing cholesterol goal attainment (from 35.5% of patients before to 59.8% after the intervention).110 There appears to be no single approach that will solve the complex issue of improving dyslipidemia
management. The required lifestyle changes are known and effective medications are available. The challenge is for all interested parties—nurses, physicians, pharmacists, employers, and health plans—to encourage patients to change their behavior.

Advances in medical treatments will fail to realize their potential in reducing chronic illness unless the system can address the determinants of adherence. Access to medications is necessary but insufficient in itself for the successful treatment of dyslipidemia and other conditions. The easiest way to determine adherence may be for physicians to inquire in a nonjudgmental manner about how many doses are missed in the average week. Medication adherence has been proposed as the “sixth vital sign” in addition to standard vital signs recorded on patient visits (ie, blood pressure, pulse, respiration, temperature, and weight [or body mass index]). Patients who have the most difficulty staying adherent to their regimen—whether because of such factors as cost, forgetfulness, misunderstanding of the benefits or side effects, and number of pills—will benefit from the more intensive interventions mentioned in this study, such as electronic monitoring with telephone reminders.

Author Disclosure Statement

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References


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