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Original Articles

Treatment pattern changes in high-risk patients newly initiated on statin monotherapy in a managed care setting

Ross J. Simpson Jr., MD, PhD*, Kaan Tunceli, PhD, Dena R. Ramey, BS, David R. Neff, DO, David M. Kern, MS, Hui-Min Hsieh, PhD, Debra A. Wertz, PharmD, Judith J. Stephenson, SM, Elizabeth Marrett, MPH, Joanne E. Tomassini, PhD, Terry A. Jacobson, MD

University of North Carolina Hospital, 160 Dental Circle CB 7075, 6033 Burnett–Womack, Chapel Hill, NC 27599–7075, USA (Dr Simpson); Merck & Co., Inc., Whitehouse Station, NJ, USA (Drs Tunceli, Neff, and Tomassini and Ms Ramey and Marrett); HealthCore, Inc, Wilmington, DE, USA (Drs Hsieh and Wertz, Mr Kern, and Ms Stephenson); and Emory University, Atlanta, GA, USA (Dr Jacobson)

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BACK GROUND: For high-risk patients who do not achieve guideline-recommended LDL-C levels, more intensive treatment including statin-uptitration to higher doses or potency, as well as combination therapy may be considered. A better understanding of statin treatment patterns in real-world clinical practice may contribute to improved lipid-lowering management in these patients.

OBJECTIVE: We determined treatment pattern changes among patients with high risk of cardiovascular disease who were not at low-density lipoprotein cholesterol (LDL-C) goal on statin monotherapy.

METHODS: Treatment pattern changes were evaluated among patients newly initiated on statins between January 1, 2006, and August 31, 2009, in the HealthCore Integrated Research Database. Rates and mean time to first and second treatment changes were examined in patients with claims for coronary heart disease (CHD), atherosclerotic vascular disease (AVD), and diabetes mellitus during 12 months before index, who were not at LDL-C $<$70 mg/dL at their first-eligible LDL-C test ($\geq$4 weeks after index). Therapy change was assessed for 12 months after the LDL-C result.

RESULTS: Of 11,473 eligible subjects, 61.3% had diabetes, 26.6% had CHD and AVD, and 12.1% had CHD and AVD and diabetes. At index, patients were prescribed medium-potency levels of statins, including simvastatin (44.7%), atorvastatin (31.5%), and other statins (23.8%). Mean $\pm$ SD LDL-C before statin initiation was 138 $\pm$ 34 mg/dL, and at the first-eligible LDL-C result after index, it was 101 $\pm$ 25 mg/dL. During follow-up, 7444 subjects (64.9%) experienced a first treatment change, with mean time to change of 93.8 $\pm$ 92 days, whereas 4029 (36.1%) had no treatment change. Discontinuation of index therapy occurred in 46.9% of subjects and medication switches or titration in 18.0% (index statin titration, switch to other statins, other lipid-lowering therapies [LLT], including ezetimibe). Of the discontinuers, 27.4% restarted LLT. Of subjects with a first treatment change who did not discontinue, 48.9% experienced a second therapy change. Results were similar between the 3 high-risk groups.

CONCLUSIONS: In this managed-care setting, among patients with high risk of cardiovascular disease who were not at LDL-C goal, statins were usually started at medium-potency doses without being

* Corresponding author.
E-mail address: RSimpson@med.unc.edu
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titrated up, whereas nearly one-half had a discontinuation of LLT within 12 months. These treatment patterns indicate the need for better patient and provider education as well as other system-wide modifications to improve medication adherence.

Statins are highly effective in lowering low-density lipoprotein cholesterol (LDL-C) and in reducing cardiovascular disease (CVD) risk.[1–5] In randomized clinical trials, statins have been found to be generally well tolerated and safe for most patients.[1] However, many patients do not reach guideline-recommended goals, particularly patients at high CVD risk, and more intensive therapy with higher statin doses or potency as well as combination therapy may be considered for these patients.[6,7] In addition to concerns commonly raised in relation to adherence of any medication used in long-term treatment, statins seem to confront unique barriers to therapy adherence. Despite the proven efficacy and safety of statin therapy in clinical trials, and recommendations to gradually increase statins from low to higher doses or potency over time,[2–5] reluctance on the part of physicians to prescribe or patients to take higher doses of statins may contribute to the persistently low rate of guideline-recommended LDL-C goal attainment in high-risk patients.[8–12] Low patient belief in the benefit of statins and concerns of serious side effects are also contributing factors.[10,13]

Understanding the patterns of statin use may contribute to better implementation of guideline-recommended lipid management with statins. As such, we performed a systematic analysis of statin persistence in a national sample of commercially insured, statin-eligible, high-CVD risk patients. For the study, patients with high-risk CVD newly started on statins with LDL-C levels above the guideline-recommended optional goal of <70 mg/dL were selected. The goal of this study was to evaluate the frequency and time course of treatment pattern changes, discontinuations, up and down titrations, switching to higher potency statins, and augmentation of therapy in these patients.

Study methods

Study design

This was an observational cohort study that used administrative claims data to determine the treatment pattern changes of high-risk patients (ie, patients with CHD, atherosclerotic vascular disease [AVD], or diabetes only) who were newly treated with statin monotherapy and were not at LDL-C goal (<70 mg/dL) at the first eligible LDL-C result (≥4 weeks after index).

Data source

The data source for this study was the HealthCore Integrated Research Database for claims submitted during the time period from January 1, 2005, through August 31, 2010. The HealthCore Integrated Research Database contained longitudinal claims data on approximately 35 million patients from 14 geographically dispersed health plans in the Northeast, Midwest, South, and Western regions of the United States. HealthCore accessed the data in a manner that complied with federal and state laws and regulations, including those related to the privacy and security of individually identifiable health information.

Data validation and checks were performed at several levels of the process. Programming of the analytic file was performed in accordance with standard operating procedures (by HealthCore). Initial data counts obtained from the database were reviewed by examination of any potential plan differences between extraction criteria steps and overall step-by-step fall-out of patients in application of the extraction criteria. Data quality procedures included logical checks, consistency checks, and internal validation to ensure the accuracy and consistency of values within individual data elements performed at the individual file level (eg, pharmacy, hospital, medical, eligibility) as well as across these various file types. Frequency distributions on values for a particular data element were run to check for normalcy and outlier values. Skewed data or outliers were handled per the requirements of the data analysis protocols and plan. Files were examined for valid values, and data fields were converted as necessary for consistent formatting of common data elements. Individual study database and analytic data sets were standardized by use of standard definitions and processing of the data in a predefined manner across types of claims and health plans. Definitions of derived data were provided and precoded for the researcher.

Population selection criteria and eligibility

Patient identification

Patients selected for the study were identified from a review of available medical claims during the study period and pharmacy claims during the patient identification period, from January 1, 2006, through August 31, 2009. Patients who were 18 years of age or older on the index date (initiation of statin monotherapy) and had a diagnosis