

Higher Cardiovascular Event Rates for Americans Who Do Not Meet 2018 Multidisciplinary Guideline on the Management Of Blood Cholesterol Thresholds

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SYNOPSIS

The 2018 Multidisciplinary Guideline on the Management of Blood Cholesterol calls **for the initiation and intensification of lipid-lowering therapy (LLT) if low-density lipoprotein cholesterol (LDL-C) exceeds thresholds in patients at elevated risk**. Despite LDL-C being a major modifiable cardiovascular risk factor, most patients fail to meet guideline thresholds.

PURPOSE

To assess the consequences of failure to achieve LDL-C guideline threshold in patients at elevated risk using the Family Heart Database™.

METHODS

The Family Heart Database™ is comprised of diagnostic, procedure and prescription data from medical claims as well as lab result data for **>324 million individuals** in the US from 2012 to 2021.

The dataset used in this retrospective analysis assessed **annual cardiovascular event (CE) rates in 56,349 patients with severe primary hypercholesterolemia (LDL-C ≥190 mg/dL), other risk factors, or ASCVD** who met the following criteria:

- **≥ 48 months** of sufficient diagnosis, procedure, prescription, and lab data
- **≥ 3 cholesterol results**
- **Above Threshold** or **Below Threshold** for at least **70% of the study period** (including baseline).

LDL-C guideline thresholds are defined as:

- **≥100 mg/dL** for patients with severe **primary hypercholesterolemia (LDL-C ≥190 mg/dL) and/or other risk factors**
- **≥70 mg/dL** for individuals with **clinical ASCVD**

RESULTS

- 39,117 and 17,232 individuals met the criteria for Above Threshold and Below Threshold cohorts, respectively.
- A 1:1 PSM resulted in 14,755 individuals in each group.
- The assessment period (mean ± standard error) was 2,091.58 ± 3.46 days/PSM patient.

Real-world data from the Family Heart Database™ showed that Americans in the Above Threshold group had an AIR of first CE 44.2% (p<0.0002) higher than those in the Below Threshold group (2.2% or 1,879 vs. 1.5% or 1,226).

Total CEs (first and subsequent) in the Above Threshold group were also 49% higher (p< 0.0002) than those in the Below Threshold group (3,510 vs. 2,356).

Unfortunately, few Americans ever reached recommended LDL-C levels, despite the availability of many effective and safe LLTs.

CONCLUSIONS

In this real-world evaluation of patients at elevated risk, achieving LDL-C guideline thresholds substantially reduces cardiovascular events. Greater emphasis on achieving LDL-C control would improve cardiovascular health at a population level.

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METHODS (cont.)

Patient histories were divided into **contiguous episodes** characterized by LLT use (mono/combination/no therapy), prescriptions filled, and LDL-C levels (see Figure 1).

An **18-month baseline period** was used to determine the **covariates for propensity score matching (PSM)**. Individuals with a CE during the baseline were excluded.

Following the baseline period, individuals were observed for **≥30 months** to determine the date of the **first CE and annual incidence rates (AIR)** were calculated.

Figure 1: AIR of first CE in patients Above and Below Threshold

Representative patients are shown with **complex and variable lipid profiles over time**, including episodes (represented by colored blocks) that are characterized by LDL-C level and medication use. Periods of time with missing or insufficient data appear as white gaps and are not episodes.

