Impact of Lipid-Lowering Therapies on Triglyceride Levels in U.S. Patients With ASCVD in the Real World

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Introduction

- Dyslipidemia is a significant risk factor for atherosclerotic cardiovascular disease (ASCVD).[1]
- Current standards of care like statins and ezetimibe effectively lower low-density lipoprotein cholesterol (LDL-C) levels.
- Many patients remain at high risk of cardiovascular events, potentially driven by triglycerides.[2] Evidence on the impact of these treatments on triglyceride levels remains limited.

Objective

- To evaluate changes in triglyceride levels among ASCVD patients in the U.S.

Methods

Study Design

- Design: observational, retrospective cohort study
- Data sources: Komodo Research Dataset, Komodo Laboratory Results, Komodo Race and Ethnicity, and Komodo Mortality Insights

Komodo Research Dataset (KRD): Composed of administrative data and claims, KRD captures routinely collected health services utilization records and expenditures for over 330 million de-identified unique individuals in the U.S. Native to HIPAA-compliant, privacy-preserving tokens, KRD offers extended patient-level observations of medical encounters and outpatient pharmacy dispensings via linkage across health and pharmacy insurance plans. Data availability is as early as 2016. Specialty datasets such as genomics, laboratory test results, and electronic medical records are readily accessible via additional linkage. KRD is the optimized schema of the underlying Healthcare Map® from Komodo Health® for real-world evidence (RWE) generation and health economics and outcomes research (HEOR).

Komodo Lab Results: Unit-standardized laboratory results of routine and specialized tests generated by over 90 million unique individuals across care settings of hospitals, nursing facilities, and ambulatory offices in the U.S.

Komodo Race and Ethnicity: Self-reported or healthcare provider-/system-assigned race and ethnicity information for over 200 million unique individuals obtained from assorted categories of data sources including EHR, patient intake forms, payer enrollment files, and statistically reliable consumer reporting agencies. Value-standardized and pre-certified for dataset linkage via privacy-preserving tokens.

Komodo Mortality Insights: Death information derived from a combination of Social Security Administration's Death Master File, state mortality registries, curated public death notices, and other data provider proprietary data. Pre-certified for dataset linkage via privacy-preserving tokens.

Inclusion Criteria

Eligible members must have met all of the following requirements:

- Use of statin or ezetimibe, evidenced by outpatient pharmacy dispensing, during 1/1/2016 to 9/30/2025
  - Index date: date of the first use
- >=1 ASCVD diagnosis in 6 months before and excluding the index date (baseline)
- Continuous enrollment in medical and pharmacy benefits for at least 6 months before and after the index date
  - No death recorded within either period
- >=18 years old on the index date
- >=1 triglyceride result during the 6 months before the index date
- >=1 triglyceride result in 6 months after and including the index date

Analysis

- Eligible members were stratified by 3 groups based on the treatments received within 6 months after the index date
  - Group 1: statin monotherapy
  - Group 2: ezetimibe monotherapy
  - Group 3: statin and ezetimibe combined therapy
- Patient characteristics and changes of triglycerides from baseline to follow-up were described.
- A linear mixed model adjusted for demographics (age, sex, region) was built to assess longitudinal changes in triglyceride levels.

Results

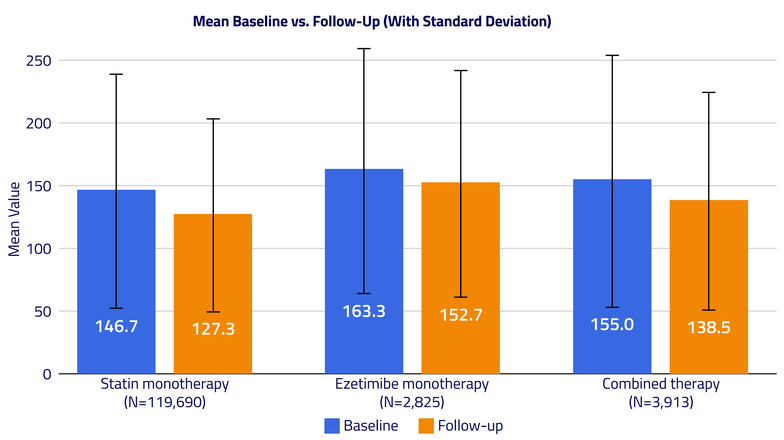
- Totals of 2,752,295 statin monotherapy, 40,469 ezetimibe monotherapy, and 64,287 combined therapy users were identified.
- The mean age ranged from 64.4 years (statin) to 69.1 years (ezetimibe).
- Female composition varied from 39.0% (combined therapy) to 50.8% (ezetimibe).
- 65.8% of ezetimibe patients were enrolled in Medicare, compared to 49% of patients in the other two groups.
- Subsets of 119,690 statin monotherapy, 2,825 ezetimibe monotherapy, and 3,913 combined therapy users were identified with ≥1 triglyceride result both at baseline and during follow-up.

Table. Demographics of ASCVD Patients with Evidence of Statin and Ezetimibe Use

Characteristic*	Statin monotherapy N=2,752,295	Ezetimibe monotherapy N=40,469	Combined therapy N=64,287
Age, years			
Mean (SD)	64.4 (12.3)	69.1 (10.5)	65.0 (11.1)
18-29	12,377 (0.4%)	65 (0.2%)	127 (0.2%)
30-39	65,335 (2.4%)	270 (0.7%)	929 (1.4%)
40-49	239,461 (8.7%)	1,306 (3.2%)	4,409 (6.9%)
50-59	623,550 (22.7%)	5,755 (14.2%)	13,941 (21.7%)
>=60	1,811,572 (65.8%)	33,073 (81.7%)	44,881 (69.8%)
Sex			
Female	1,199,929 (43.6%)	20,577 (50.8%)	25,092 (39.0%)
Male	1,500,954 (54.5%)	18,827 (46.5%)	37,534 (58.4%)
Race			
Asian or Pacific Islander	108,980 (4.0%)	926 (2.3%)	2,370 (3.7%)
Black or African American	378,384 (13.7%)	3,400 (8.4%)	5,908 (9.2%)
Hispanic or Latino	376,526 (13.7%)	3,342 (8.3%)	6,772 (10.5%)
White	1,533,466 (55.7%)	28,794 (71.2%)	40,362 (62.8%)
Other	97,618 (3.5%)	1,337 (3.3%)	2,191 (3.4%)
Insurance type			
Commercial	891,768 (32.4%)	10,883 (26.9%)	26,010 (40.5%)
Medicaid	491,804 (17.9%)	2,793 (6.9%)	6,380 (9.9%)
Medicare	1,359,206 (49.4%)	26,641 (65.8%)	31,648 (49.2%)
Region			
Midwest	649,566 (23.6%)	9,430 (23.3%)	14,517 (22.6%)
Northeast	708,842 (25.8%)	10,058 (24.9%)	17,624 (27.4%)
South	857,987 (31.2%)	13,878 (34.3%)	20,962 (32.6%)
West	516,203 (18.8%)	6,854 (16.9%)	10,608 (16.5%)

*Distribution of "Unknown" demographic characteristics are not shown.

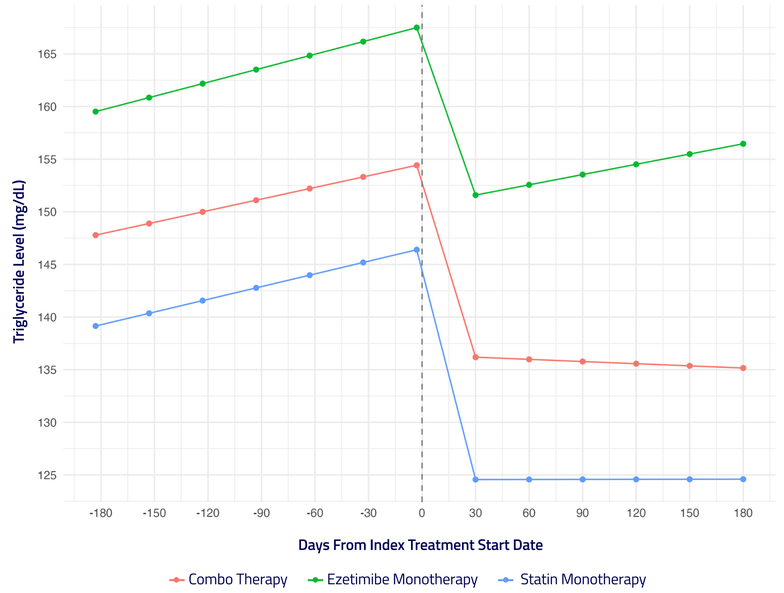
Figure 1. Mean Triglyceride Values per ASCVD Patient Before and After Treatment



Results

- Triglycerides changes:
  - Higher triglyceride levels were observed in the ezetimibe monotherapy group (163.3 mg/dL vs. 146.7 mg/dL statin and 155.0 mg/dL combined therapy) at baseline.
  - During the 6-month follow-up, the greatest triglyceride reductions were observed in the statin group (19.3 mg/DL), followed by combined therapy (16.5 mg/dL) and ezetimibe (10.6 mg/dL).
- The mixed model estimates showed decreases in triglyceride levels in the 6 months after treatment across all groups (16.0-22.0 mg/dL reduction, *P<.001*).

Figure 2. Pre- and Post-Treatment Triglyceride Trajectories by Cohort



Conclusions

- Both statin and ezetimibe therapies lower triglyceride levels after initial use.
- Standard lipid-lowering regimens may exhibit limited effectiveness in managing residual ASCVD risk associated with triglycerides.

References

[1]Du Z, Qin Y. Dyslipidemia and cardiovascular disease: current knowledge, existing challenges, and new opportunities for management strategies. *J Clin Med.* 2023;12(1):363.

[2]Toth PP, Fazio S, Wong ND, Hull M, Nichols GA. Risk of cardiovascular events in patients with hypertriglyceridaemia: A review of real-world evidence. *Diabetes Obes Metab.* 2020; 22(3):279-289.

Disclosures

- Authors are employees of Komodo Health and receive employment-based compensation from Komodo Health.
- Marmot™ was used for exploratory analytics and to perform feasibility assessment and preliminary analyses within KRD (accessed November 10, 2025).
- Gemini Pro was used as writing and visualization assistant (accessed April 4, 2026).

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