Statin Use and Titration Patterns in the First Year Following a Cardiovascular Event in Commercially Insured Populations

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BACKGROUND

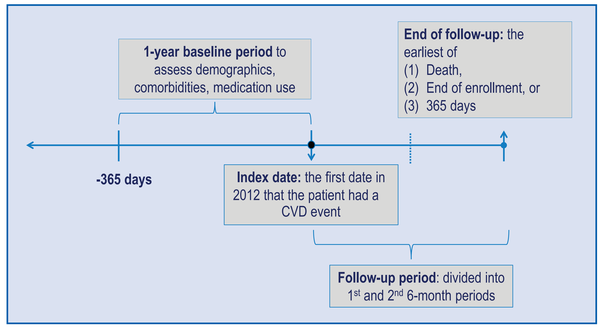
- Guidelines recommend statin treatment following a cardiovascular disease (CVD) event.[1]
- Real-world evidence suggests underuse of guideline-recommended statins after a CV event.[2,3]
- Characterizing the real-world use and titration of statins in the post-event period may highlight potential treatment gaps among high-risk CVD patients.

OBJECTIVES

- To identify and characterize a cohort of beneficiaries who experience an atherosclerotic CVD event from two commercial claims databases
- To describe real-world patterns of statin use and titration in the first year following a CVD index date (divided into the 1st and 2nd 6-month periods)

METHODS

Figure 1. Study Design Schema



- Retrospective Cohort Study Design
  - Data source: MarketScan and Optum commercial claims databases
  - Beneficiaries: ≥ 18 years of age with ≥ 1 year of continuous coverage as of their index CVD date
  - CVD events were identified as the first occurrence of myocardial infarction (MI), unstable angina, ischemic stroke, or a transient ischemic attack (TIA).
  - ICD-9 Codes used:
    - MI: 410.xx (excluding 410.x2)
    - Unstable angina: 411.1, 411.81, 411.89
    - Ischemic stroke: 433.x1, 434.x1
    - TIA: 435.x
- Low-density lipoprotein cholesterol (LDL-C) lowering therapy was defined as use of a statin, ezetimibe (alone or in combination with a statin), bile acid sequestrant, mipomersen, or lomitapide (identified using National Drug Codes).
- LDL-C lowering therapy was evaluated was evaluated in the baseline period up to and including the CVD event date.
  - Prevalent LDL-C lowering therapy users were defined as those using therapy at the time of their CVD event.
- Patients were followed for up to 365 days post-CVD event.
- Statin use and titration were evaluated in the 1st and 2nd 6-month time periods following CVD event.
- Intensity of statin therapies was determined using ACC-AHA guidelines[1] (Table 1).

METHODS (Continued)

Table 1. Statin Therapy Intensity

Statin Therapy	Low (mg/day)	Moderate (mg/day)	High (mg/day)
Atorvastatin	N/A	< 40	≥ 40
Rosuvastatin	< 10	≥ 10 to < 20	≥ 20
Simvastatin	< 20	≥ 20 to < 80	≥ 80
Fluvastatin	< 80	≥ 80	N/A
Lovastatin	< 40	≥ 40	N/A
Pitavastatin	< 2	≥ 2	N/A
Pravastatin	< 40	≥ 40	N/A

RESULTS

Table 2. Baseline Demographics for Commercial Beneficiaries Experiencing a CVD Event, 2012

	Overall population		On LDL-C lowering therapy*	
	MarketScan 2012 N = 183,752	Optum 2012 N = 63,199	MarketScan 2012 N = 65,406	Optum 2012 N = 27,462
Age at index date, years, mean (SD)	67.3 (14.6)	72.4 (12.5)	67.3 (13.2)	71.1 (12.1)
Age categories, years, %				
18 – < 65 years	47.4	25.3	47.2	28.4
65 – < 75 years	18.0	26.0	20.0	28.3
≥ 75 years	34.6	48.7	32.8	43.3
Male, %	54.6	51.4	60.7	54.9
Geographic region, %				
Midwest	29.1	24.3	32.5	22.8
Northeast	19.8	10.7	17.7	11.0
South	34.0	40.7	33.3	41.3
West	14.9	21.4	15.5	21.9
Missing	2.3	N/A	1.1	N/A

*Among those on LDL-C lowering therapy as of index date

Table 3. Baseline Comorbidities Among Commercial Beneficiaries Experiencing a CVD Event, 2012

	Overall population		On LDL-C lowering therapy*	
Comorbidities, %	MarketScan 2012 N = 183,752	Optum 2012 N = 63,199	MarketScan 2012 N = 65,406	Optum 2012 N = 27,462
Charlson Comorbidity Index				
< 0	7.1	4.6	7.3	4.5
1 – 3	78.2	78.3	79.5	79.4
≥ 4	14.8	17.7	13.2	16.1
MI	34.1	37.1	40.4	41.8
Unstable angina	24.5	13.3	28.1	14.6
Ischemic stroke	30.1	26.5	25.8	22.4
Hemorrhagic stroke	3.5	1.9	2.3	1.3
Cerebrovascular disease	31.4	19.6	28.7	17.5
TIA	30.6	27.9	26.1	26.4
CABG/PCI	23.9	24.3	34.1	33.1
PAD	9.3	9.7	8.7	9.5
T2DM	31.4	32.6	33.7	35.2
Hypertension	67.7	74.7	66.6	76.6
Heart failure	21.3	24.6	20.4	23.1
VTE	5.0	3.7	3.7	2.8
Cancer**	9.2	8.9	7.9	7.8
CKD (all stages)	17.6	24.9	16.3	23.0

*Among those on LDL-C lowering therapy as of index date
**Excludes non-melanoma skin cancer
CABG/PCI, coronary artery bypass grafting/percutaneous coronary intervention; CKD, chronic kidney disease; PAD, peripheral artery disease; T2DM, type 2 diabetes mellitus; VTE, venous thromboembolism

RESULTS (Continued)

- In 2012, there were 183,752 and 63,199 patients identified with a CVD event of interest in MarketScan and Optum, respectively.
  - Those in MarketScan were slightly younger vs. those in Optum (mean age 67.3 years vs. 72.4 years).
  - Among CVD patients, 54.6% in MarketScan and 51.4% in Optum were male (Table 2).
- Among identified CVD patients, 65,406 (36%) in MarketScan and 27,462 (43%) in Optum were on an LDL-C lowering therapy as of the index date.
- The most commonly identified comorbidities were:
  - Hypertension: 68% in MarketScan and 75% in Optum
  - Previous MI: 34% in MarketScan and 37% in Optum
  - T2DM: 31% in MarketScan and 33% in Optum
- Comorbidity burden was similar between those on and off-LDL-C lowering therapy as of the CVD event date (Table 3).

Figure 2. Statin Use and Titration Patterns Following a CVD Event Among Beneficiaries in MarketScan

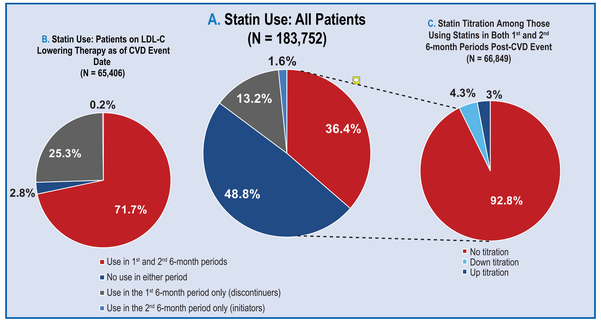
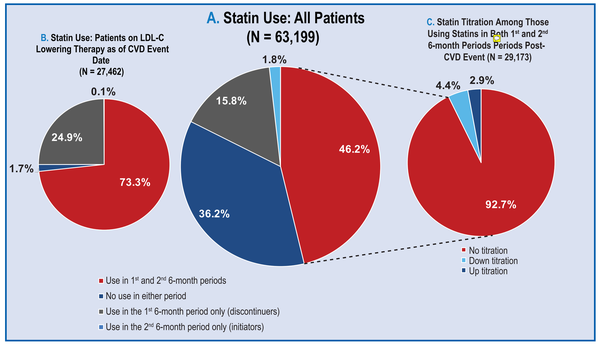


Figure 3. Statin Use and Titration Patterns Following a CVD Event Among Beneficiaries in Optum



RESULTS (Continued)

- Among all CVD patients, 49% of beneficiaries in MarketScan and 36% in Optum did not use a statin during either the 1st or 2nd 6 month follow-up periods.
  - 36% in MarketScan and 46% in Optum used a statin in both periods.
- Among CVD patients who were on LDL-C lowering therapy at the time of the CVD event (N = 65,406 in MarketScan, N = 27,462 in Optum):
  - 72% – 73% used a statin during both periods (Figures 2 b and 3b)
  - A small percent (3% in MarketScan, 2% in Optum) of those already on an LDL-C lowering therapy did not use a statin in either follow-up period.
- Among beneficiaries who used statins during both the 1st and 2nd 6 month follow-up periods:
  - 93% in both databases showed no evidence of statin titration (Figures 2c and 3c)
  - Titration results were similar among patients already on an LDL-C lowering therapy at the time of the CVD event (data not shown).

STRENGTHS AND LIMITATIONS

- Strengths
  - These data cover ~250,000 covered individuals experiencing a CVD event in 2012, allowing researchers an opportunity to understand the real-world treatment patterns among a large commercially insured population.
  - Follow-up time for up to 12 months allowed for detailed investigation of use and titration patterns in relevant treatment intervals.
- Limitations
  - Data among the commercial population may not be generalizable to beneficiaries covered by federal or state insurance programs.
  - ICD-9 codes may not accurately capture all CVD events.
  - While prescription drug fills are captured, it is unknown if treatments were actually taken by the intended recipients.
  - LDL-C values were only available for a subset of patients with a CVD event in the database; thus, we were unable to assess whether all beneficiaries required titration.

CONCLUSIONS

- Although 51% – 64% of all beneficiaries identified with a CVD event in two commercial databases filled a statin prescription in each 6-month period post-event, 36% – 49% did not fill a prescription in either period, indicating an important gap in treatment.
  - Statin use post-CVD event was higher among commercially insured beneficiaries in the Optum database compared with those in MarketScan.
- Patients who were prevalent users of a LDL-C lowering therapy at the time of the CVD event were much more likely to use a statin in the post-event period.
- Regardless of prevalent use, the vast majority of patients did not titrate their statin in the post-event period.
- In a commercially insured, secondary prevention population, there are treatment gaps in in the post-CVD event period when lowering of LDL-C is most critical for reducing the risk of mortality and recurrent CVD events.

REFERENCES

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2. Bittner V, et al. *Am J Coll Cardiol.* 2015; 66:1864–1872.
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DISCLOSURES

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