Estimating the Costs of Familial Hypercholesterolemia Management Using Primary Claims Data

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BACKGROUND

- Familial hypercholesterolemia (FH) is a genetic condition that affects lipid metabolism and increases risk of cardiovascular disease.
- FH affects approximately 1 every 212 persons in the United States.
- Limited understanding of costs for FH diagnosis and lipid-lowering medications prevents the economic assessment of optimal screening and treatment strategies.

METHODS

- We analyzed administrative commercial claims from a US regional insurer from January 2018 to December 2020.
- Two cohorts of hyperlipidemia and FH patients were identified using ICD-10 diagnosis codes on 1 inpatient or 2 outpatient claims.
- Mean costs of lipid-lowering therapy were measured in 2020 US dollars using winsorization to address outlier costs.
- We assessed the impact of medication choice on cost for statins and PCSK9 inhibitors through linear regression with robust standard errors.

RESULTS

Table 1: Summary of Hyperlipidemia Treatment Charges

Product	Mean Charge	Standard Deviation	N Claims
Lipid Panel	$83.27	$42.33	8,162
Statin Prescription (30-Day)	$176.33	$94.24	2,281
Statin Prescription (90-Day)	$407.39	$240.06	3,375
Ezetimibe Prescription (30-Day)	$192.25	$162.48	479
Ezetimibe Prescription (90-Day)	$322.85	$304.88	642
PCSK9 Inhibitor Prescription (28-Day)	$739.60	$358.30	1,651

Table 2: Linear Regression Models for Mean Medication Charges

Parameter	30-Day Statin Prescription Charge	90-Day Statin Prescription Charge	28-Day PCSK9 Inhibitor Prescription Charge
Female	-2.038 (3.916)	-26.82* (8.95)	-11.33* (4.57)
Age	0.66** (0.20)	0.43 (0.42)	-0.55* (0.24)
Rosuvastatin	181.56*** (8.34)	377.16*** (15.05)	--
Atorvastatin	106.68*** (8.10)	292.45*** (14.38)	--
Evolocumab	--	--	-762.02*** (5.77)
Intercept	19.58 (12.77)	104.61** (27.28)	1,379.63*** (13.92)

*** p<0.0001, ** p<0.001, * p<0.05 ; Robust Standard Errors in parentheses

- 90-day statin prescriptions were more commonly filled than 30-day statin prescriptions and cost only 2.3 times the average charge of a 30-day statin prescription.
- PCSK9 inhibitors generated the highest mean charges among lipid-lowering therapies used by patients with FH.
- The charges for a 30-day fill of rosuvastatin and atorvastatin are $181.56 and $106.68 higher relative to simvastatin respectively. The charges for a 90-day fill of atorvastatin and rosuvastatin are $292.45 and $377.16 more expensive respectively relative to simvastatin.
- Compared to a 28-day fill of alirocumab, a 28-day fill for evolocumab is less expensive by $762.02.

CONCLUSIONS

- Lipid-lowering medications can generate substantial costs for treating FH as a lifelong condition.
- More research is needed to examine costs from different stakeholder perspectives (e.g. patients, public payers).
- Future studies should evaluate the cost-effectiveness of various screening and treatment strategies for managing elevated cardiovascular disease risk.