



Primary Care Physician and Cardiologist Characteristics Predicting Diagnosis and Treatment of Patients with Familial Hypercholesterolemia: A Survey from the National Lipid Association

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ABSTRACT

Background: Heterozygous familial hypercholesterolemia (HeFH) is an inherited disorder that leads to very high levels of LDL-C causing premature cardiovascular disease. Only 10% of patients are diagnosed, leading to appropriate treatment

Methods: The NLA surveyed 500 cardiologists and 500 primary care physicians (not including pediatricians) in the United States who prescribe medications and have patients with baseline LDL-C ≥ 190 mg/dL. We built logistic regression models by including variables independently associated with correctly diagnosing a patient with HeFH using a p-value criteria of 0.15. The patient is a 30-year-old normal weight male with a family history of premature coronary heart disease who, despite life-style changes, has an LDL cholesterol of 230 mg/dL (triglycerides are normal). We used standard statistical approaches to determine how PCPs and cardiologists treat patients with HeFH and if they differ.

Results: The appropriate diagnosis of HeFH was made by only 43% of primary care physicians and 57% of cardiologists ($p=0.0001$ for a difference). Thirty-eight percent of all physicians inappropriately made a diagnosis of homozygous FH. Familiarity with the Dutch Lipid Clinic Network or Simon-Broome criteria were the strongest predictors of making the correct HeFH diagnosis. Fifty-four percent of all physicians have had difficulty prescribing a PCSK9 inhibitor for a HeFH patient.

Conclusions: Physicians with common characteristics are unlikely to correctly diagnose a patient with HeFH and have difficulty prescribing a PCSK9 inhibitor.

OBJECTIVES

Determine factors that predict accurate diagnosis and treatment of patients with HeFH.

METHODS

- MedSurvey, an independent research survey vendor, was used to conduct the survey.
- The survey was sent out via e-mail to primary care physicians and cardiologists across the US from a registry of practitioners who agreed to be surveyed and matched the specialty requirements.
- The survey was fielded from August 29, 2019 to September 30, 2019.
- In total 1,561 physicians responded to the survey of which 500 primary care physicians and 500 cardiologists completed the survey.

- Screening Criteria**
- US based physician licensed and currently practicing
 - Not certified by ABCL or ACCL
 - Have seen a patient with an untreated LDL-C ≥ 190 mg/dL
 - Eligible specialty groups:
 - Family Medicine
 - General Practice
 - Internal Medicine
 - Cardiology

RESULTS

TABLE 1: Responses to questions regarding the treatment of HeFH

Variable	Overall, %	PCP, %	Cardiologist, %	p-value
Initial step in managing a patient with HeFH				0.01
Lifestyle alone	14.4	17.2	11.9	0.038
Prescribe medication	80.7	76.1	84.9	0.0023
Refer to lipid specialist	4.9	6.8	3.3	0.028
Treatment goal for adult HeFH patient free of ASCVD				0.27
Decrease in LDL-cholesterol >50%	23	21.2	24.8	0.18
LDL-cholesterol <70 mg/dL	23	22.6	23.4	0.76
LDL-cholesterol <100 mg/dL	39.3	39.6	39	0.85
LDL-cholesterol <130 mg/dL	14.7	16.6	12.8	0.09
Age would start an adult male with HeFH on a statin				0.12
<18	16.5	14	19	0.033
18-29	66.6	68.2	65	0.28
30-39	15.6	16.8	14.4	0.30
≥ 40	1.3	1	1.6	0.40
Age would start an adult female with HeFH on a statin				0.74
<18	13.9	12.6	15.2	0.29
18-29	57.4	57.8	57	0.28
30-39	22.4	23.8	21	0.30
≥ 40	6.3	5.8	6.8	0.40
Have an HeFH patient on a PCSK9i	56.3	44.2	68.4	<0.0001
Likely to prescribe a PCSK9i in an adult HeFH patient with ASCVD who needs further LDL-cholesterol lowering	76.9	66	87.8	<0.0001
Likely to prescribe a PCSK9i in an adult HeFH patient without ASCVD who needs further LDL-cholesterol lowering	60.6	51	70.2	<0.0001
Personally prescribed a PCSK9i to an adult HeFH patient	58.6	46.8	70.4	<0.0001
Encountered difficulty prescribing a PCSK9i in an HeFH patient	53.6	58.1	50.6	0.07

For variables with multiple categories, individual category p-values represent comparison to the combination of the other categories of the variable. ASCVD = atherosclerotic cardiovascular disease; HeFH = heterozygous familial hypercholesterolemia; LDL-cholesterol = low-density lipoprotein cholesterol; PCP= primary care physician; PCSK9i = proprotein subtilisin-kexin type 9 inhibitor.

FIGURE: Diagnosis made by primary care physicians and cardiologists and both

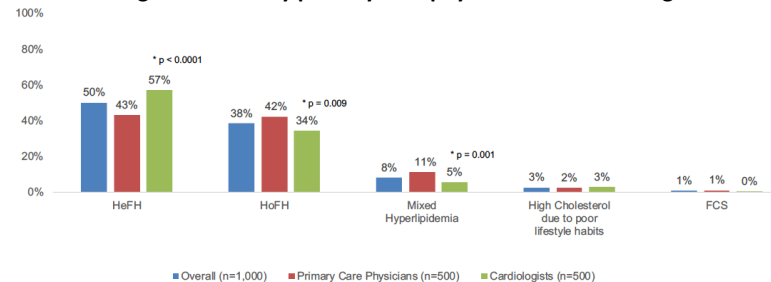


TABLE 2: Multivariable logistic regression predicting a diagnosis of HeFH in a patient with LDL cholesterol ≥ 190 mg/dL

Variable	OR	95%CI
Familiarity with Dutch Lipid Clinic Network Score	4.55	2.20-9.40
Familiarity with Simon Broome criteria	3.09	1.18-8.11
LDL-C goal used		
<70 mg/dL vs $\geq 50\%$ reduction	2.08	1.27-3.41
<100 mg/dL vs $\geq 50\%$ reduction	0.92	0.64-1.39
<130 mg/dL vs $\geq 50\%$ reduction	0.81	0.50-1.32
More likely to have access to a lipid specialist	1.67	1.23-2.27
PCP vs cardiologist	0.72	0.53-0.98
Monitoring LDL-cholesterol in adults with family history at age:		
30-39 years vs 18-29 years	0.66	0.47-0.92
40-49 years vs 18-29 years	0.61	0.28-1.33

HeFH = heterozygous familial hypercholesterolemia; OR = odds ratio; PCP = primary care physician

SUMMARY

- An appropriate diagnosis of HeFH is made by only half of primary care physicians and cardiologists.
- Familiarity with internationally respected diagnostic criteria, having a clinical lipidologist available, and the monitoring of LDL-C at a younger age are highly predictive of making an accurate diagnosis.
- Both primary care physicians and cardiologists are likely to prescribe a PCSK9 inhibitor for a HeFH patient but also encounter difficulties when doing so.
- Both primary care physicians and cardiologists are unlikely to start an HeFH patient on a statin prior to age of 18 years, particularly in women.

CONCLUSIONS

The current diagnosis and treatment of patients with HeFH in the US by primary care physicians and cardiologists is insufficient. A lack of awareness of valid diagnostic criteria and ability to access a clinical lipidologist are particularly concerning. Difficulties in prescribing PCSK9 inhibitors combined with diagnostic challenges is a public health problem.

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