

Early-onset Coronary Artery Disease/Familial Hypercholesterolemia

Coronary artery disease (CAD) affects roughly 8% of Americans 20 years of age and older¹ and is one of the leading causes of morbidity and mortality in the US.² CAD is caused by atherosclerosis, a progressive narrowing and hardening of arteries and blood vessels. The atherosclerotic plaque formation process often starts during childhood, but affected persons typically remain asymptomatic until CAD develops, often around 40 years of age or later.¹ Risk factors for CAD include cigarette smoking, hypertension, diabetes, and various forms of dyslipidemia, most notably hypercholesterolemia.² About 16% of adults have hypercholesterolemia¹, which is familial in about 1 in 250 individuals in the US.³

While diet and lifestyle changes are generally recommended as the first-line treatment for hypercholesterolemia, especially in children, these measures are rarely effective by themselves in patients with familial hypercholesterolemia (FH).⁴ Patients with FH may require pharmacological intervention starting in childhood.^{4,5} Identification of individuals with pathogenic mutations in genes associated with FH early in life may allow timely initiation of treatment that may help prevent early-onset CAD.⁴

Genetic testing for presence of a germline mutation in the genes known to be associated with FH can confirm a diagnosis of FH and also facilitate detection of at-risk children in affected families.⁶ Mutations in the genes *LDLR*, *APOB*, and *PCSK9* account for more than 90% cases of FH.⁷ A very rare recessive form is known to be due to mutations in *LDLRAP1*.⁸ Additionally, specific mutations in the lipid biosynthesis genes *ABCA1*, *APOA2*, *APOC3*, *PON1*, and *PON2* may also modify a patient's risk for CAD.⁹⁻¹²

Genetic testing for the presence of germline mutations in the genes known to be associated with early-onset CAD and familial hypercholesterolemia may:

- Confirm a diagnosis of familial hypercholesterolemia.
- Identify first-degree relatives of an index patient who are at increased risk for FH and early-onset CAD and may benefit from the initiation of preventative treatment.
- Identify patients who carry mutations in lipid biosynthesis genes who may be at increased risk for CAD and may benefit from regular cardiac screening.
- Facilitate appropriate genetic counseling.

Relevant Assays*

Test Name	Test No.
GeneSeq [®] : Cardio Early-onset Coronary Artery Disease/Familial Hypercholesterolemia Profile	451416
GeneSeq [®] : Cardio Familial Hypercholesterolemia Profile	452040
GeneSeq [®] : Cardio Gene Specific Sequencing, NGS**	452053
Mutation-specific Sequencing, Whole Blood [†]	451382

* Visit the online Test Menu at www.LabCorp.com for more information, including a current list of included genes, test methodology, and specimen requirements. To request a sample shipping kit, please call 866-647-0735.

**Full Gene Sequencing for any gene(s) on any of the GeneSeq: Cardio panels

[†]Known mutation testing for any gene(s) on any of the GeneSeq: Cardio panels

References

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