# Familial Hypercholesterolemia

## What is FH?

Familial Hypercholesterolemia (FH) is a hereditary disorder associated with very high levels of cholesterol, specifically LDL-C, at an early age. Individuals with FH may have high LDL-C levels at an early age and are at a significantly increased risk for coronary heart disease at younger ages than patients without FH.[1] More information can be found at color.com/providers.

## How common is FH?

FH affects at least 1 in 50 individuals with high cholesterol.[1] An estimated 1.3 million people in the US have FH, and over 90% have not been properly diagnosed.[2]

## What genetic mutations cause FH?

- The majority of pathogenic or likely pathogenic mutations that can cause FH have been described in the *LDLR*, *APOB*, and *PCSK9* genes. Research to identify additional genes is ongoing.
- Mutations in a single copy of the *LDLR*, *APOB*, or *PCSK9* genes cause Heterozygous FH (HeFH). These individuals generally have untreated LDL-C levels >160 mg/dL (children) and 190 mg/dL (adults).[3]
- Homozygous FH (HoFH) is caused by mutations in both copies of the *LDLR*, *APOB*, or *PCSK9* genes or mutations in more than one of these genes. These individuals have a more severe form of FH.

## What is the impact of FH?

- If FH is not identified and aggressively treated at an early age, individuals with HeFH have roughly a 22-fold increased lifetime risk of coronary heart disease compared with the general population.[1]
- HoFH is more severe than HeFH, and causes extremely high levels of cholesterol and increased risk of coronary heart disease at a very young age. Untreated LDL-C levels in patients with HoFH are commonly >450 mg/dL.[3] Individuals with HoFH have a very high risk of having a heart attack in childhood or adolescence. Almost all individuals with HoFH will develop coronary heart disease by age 30 unless treatment starts very early in childhood.[4]

## How is treatment different for high cholesterol with FH than high cholesterol without FH?

- Diet and lifestyle changes alone cannot achieve normal levels of cholesterol in individuals with FH. Individuals with FH may be recommended to begin treatment with high dose, high potency statins at age 8-10 (for HeFH) or at diagnosis (for HoFH) to achieve desired LDL-C levels.[5] Additional increases in statin dose, and/or other medications, may be recommended.
- All individuals with FH are considered to be at high risk for coronary heart disease based upon NCEP, NICE, NLA, AHA/ACC guidelines. Standard risk calculators for coronary heart disease are not applicable.
- Treatment is typically needed for life.[5] With optimal treatment, a person with FH has a risk of cardiovascular disease that is similar to risk in the general population.[3]
- When diagnosed, FH is often managed at specialty clinics, such as lipidology or cardiovascular clinics. A list of FH specialists across the country is available at thefhfoundation.org/find-fh-specialist.

## Who else should be tested?

- If an individual has FH caused by a single mutation, their first degree relatives are at 50% risk of having inherited the same mutation and are recommended to undergo genetic testing to determine whether they also have FH.[5]
- Many family members may be unaware that they have had high cholesterol since birth. Because of this, it is very important to encourage testing of family members. Screening is recommended before the age of 10. Parents are recommended to discuss options with a pediatrician.[5]



For references visit color.com/fhfaqreferences