



Hypercholesterolemia Disease and Prevention

There is a saying that goes, “we are what we eat.” While this can be applicable in the case of high cholesterol, there are other factors that need to be considered in how one comes to have this disease, and the necessary actions needed to prevent and treat it.

Cholesterol is a waxy substance that our bodies create to make vitamins and hormones and build cells. It is a needed for production of steroid and sex hormones, Vitamin D synthesis, and helps with the digestion of fat-soluble vitamins such as vitamins A, D, E and K. While our body produces cholesterol in the liver, we also can get it in the foods we eat. Cholesterol can be bad for our body’s, hence LDL or Low-Density Lipoprotein, or it can be good, hence HDL High Density Lipoprotein. If there is too much bad LDL or too little HDL, then cholesterol can affect our body in a negative way causing less flexibility of the arteries and their narrowing which is called Atherosclerosis. This in turn can lead to Myocardial Infarctions (Heart Attack) or Stroke due to clot formation, or Peripheral Vascular Disease (PVD). If you have enough HDL, however this is considered as good because it has a greater amount of protein which allows it to literally suck up excess cholesterol within the cells, transporting it to the liver where it is disposed.

Statistics:

- According to the CDC, 7% of children between the ages of 6 and 19 have high cholesterol while 93 million adults have cholesterol levels more than 200mg/dL and 29 million adults more than 240mg/dL. (CDC, 2021)
- Hypercholesterolemia not only increases the risk for heart disease which is said to be the number one cause of death, but also puts one at risk for stroke which is the 5th leading cause of death.

Risk factors can be separated into modifiable (can be changed) and non-modifiable (cannot be changed) risk factors. Non-modifiable factors include ethnicity. Of South Asian descent, family history, age, being a male, while modifiable factors include diabetes

mellitus, hypertension, obesity, lack of physical activity, and cigarette smoking.

High Cholesterol Warning Signs: Weight Gain, Stomach Distention, Heart pain, Aching Pains, Bumps around the eyes, Loose stools. Poor appetite, Fatigue, Depression,

Recommendations: Regardless of age, background or gender, a “heart-healthy” lifestyle should be encouraged. It is recommended that this lifestyle should be promoted when younger as it would reduce the risk factors of developing high cholesterol and in turn reduce atherosclerotic disease as the individual ages, thus ensuring better outcomes for the future. Regardless of the age, having this lifestyle serves as primary prevention for metabolic syndrome. Lifestyle changes include good diet, regular exercise, maintaining a good body weight, and not smoking or drinking alcohol.

Screening: For adults 20 years or older, screening is recommended at least once every 5 years. If there are no risks, then the middle-aged males of 45-65 and females aged 55-65 years old are recommended to have screening done every 1-2 years. If there are multiple risks, then screening should be done more often. For adults greater than 65 in age, screening should be done yearly or more often if additional risk factors are identified. Situations where increased screening or evaluation is necessary includes increased weight gain, Difficulty managing diabetes, Atherothrombotic disease progression, Change or addition of a medication that make affect lipid levels. Medications that can raise cholesterol levels include Protease Inhibitors, Diuretics, Amiodarone, Cyclosporine, Beta Blockers, Prednisone, and Anabolic Steroids.

Treatment goals are individualized and are dependent on the risk level. General goals include having one’s total Cholesterol level under 200mg/dL and HDL above 60mg/dL as this help to counteract damage done by the LDL whose levels should remain under 100mg/dL. Other goals include lifestyle changes with:

1. **Diet**- This well-balanced diet, would incorporate use of fiber, plant stanols, fresh fruits and vegetables, use of lean meats, fish and whole grains, and foods with lower saturated trans fats and cholesterol. Smoking and alcohol cessation should be encouraged.
2. **Exercise** is recommended at least 3 times a week and will help to reduce cholesterol levels but also help to manage other comorbidities.
3. **Using Statin therapies** would help to achieve healthy cholesterol levels but also help to manage other comorbidities including diabetes, high blood pressure and kidney disease. It involves the use of statin medications to lower cholesterol levels, particularly low-density lipoprotein (LDL) cholesterol, commonly known as “bad” cholesterol. Statins work by inhibiting an enzyme in the liver called HMG-CoA reductase, which plays a key role in the production of cholesterol.

If being diagnosed with hypercholesterolemia, and treatment plan is implemented, follow-up should be done with the patient every 6 weeks until the lipid goals discussed are met. Once the goals are met then follow-up should be done, and lipid levels evaluated every 6 months to a year.