Lowering LDL to Reduce Heart Disease and Stroke Risk

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What’s Inside Your Resource Guide

• About LDL
• Treatment Options to Manage LDL
• Your Healthcare Team & Preparing for Appointments
• Resources for Support
• Half of all Americans will develop ASCVD in their lifetimes.
• It remains the leading cause of death for men and women in the U.S.
• Certain conditions increase the risk including:
  – High cholesterol, diabetes, high blood pressure, tobacco use, unhealthy lifestyle, family history of high cholesterol and early heart disease
• Preventing or controlling these conditions through a healthy lifestyle is important to prevent ASCVD or delay further progression of established disease.
• Plaque build-up (or “atherosclerosis”) begins as early as adolescence, so it is important to control risk factors as soon as possible and control for a lifetime.
Improvement in risk factors have made an important reduction in heart attack and stroke deaths
What is Cholesterol?

• Waxy, fat-like substance that travels through the blood in carrier particles called lipoproteins
• It comes from 2 sources:
  – Our cells naturally produce 85% of the cholesterol in our bodies.
  – Dietary cholesterol is found in foods of animal origin.
• Your body needs some cholesterol to:
  – Create the outer coating or membranes of our cells, giving them structure and function.
  – Make vitamin D, hormones (estrogen in women and testosterone in men) and substances that help digest food (bile).
Measuring Cholesterol Levels

• Your cholesterol levels are measured with a blood test called a lipid panel.

• This laboratory test result shows your total cholesterol (TChol) and its parts:
  – LDL cholesterol (LDL-C) — the bad one
  – HDL cholesterol (HDL-C) — the good one
  – Triglycerides (TG) — the end product of digesting and breaking down fats in meals

• We know that lowering LDL-C lowers risk for heart disease and stroke.
LDL and the Body

Arteries supply blood to the heart, the brain, and the rest of the body.

An excess of LDL-cholesterol in the blood can get into the artery walls and cause:

- **Inflammation** in the artery walls
  - LDL cholesterol particles stick to lining of the walls of arteries (endothelium).
  - This process irritates the artery wall and triggers inflammation.
- **Damage to the lining of the arteries**
  - This injury makes it easier for cholesterol to enter the artery wall and cause plaque build-up.
- **Narrowing of the arteries**
  - Over time the plaque accumulates and narrows the arteries, restricting the flow of blood.
- **Formation of a blood clot**
  - Plaque may rupture or break off and cause a clot that limits blood flow through the artery to the heart (heart attack) or the artery to the brain (stroke).
Signs and Symptoms

• There are generally no symptoms or signs that early plaques are building up in your arteries.

• Sometimes the first sign may be chest pain, pain in your arms or jaw, nausea or sweating, or shortness of breath (angina) or weakness on one side and speech difficulty that resolves within 24 hours (transient ischemic attack or TIA).

• In other cases the first sign may be a heart attack or stroke that may be fatal.
Familial Hypercholesterolemia (FH)

- Some people have very high levels of LDL-C (190 mg/dL or more).
- This could be a sign of an inherited disorder called familial hypercholesterolemia.
- Family members (ex. siblings, children, parents) must also be checked and may have a 50% chance of also having inherited FH. They may have LDL-C levels that put them at high risk for ASCVD.
- Signs of FH
  - Irregular, yellow patches of skin or bumps in tendons and joints (xanthomas)
  - White, gray or yellow arcs along the outer edge of cornea (corneal arcus)
  - None
- Markedly increased risk of heart attack and stroke and require aggressive management of LDL-C.
Evaluating Your LDL Level

• “The lower it is, the better it is.”

• Lower LDL is better — the higher your LDL is, the greater your risk for developing heart disease or having a heart attack or stroke.
Evaluating Your LDL

• Your clinicians will evaluate your LDL-C level as well as other risk factors.
• Treatment is not solely based on your LDL-C level.
• The decision to recommend medication will depend on your overall risk for heart attack and stroke.
What Else Will My Clinician Need to Know?

LDL is just one piece of the puzzle for determining your overall risk for ASCVD. Your clinician will also want to know more about you:

• Other medical conditions (e.g., high blood pressure, diabetes).
• Weight and waist measurement.
• Medications you take — including prescription, over-the-counter, and herbal medications.
• Family history of heart disease.
• Lifestyle (foods you eat, activity level, tobacco use).
Risk Factors for ASCVD

Risks factors that can be modified:

• High blood pressure
• High LDL cholesterol
• Low HDL (male under 40 mg/dL; female under 50 mg/dL)
• Smoking
• Lack of physical activity
• Obesity
• Poor diet
• Diabetes
Risk Factors for ASCVD

Risk factors that cannot be modified:

- Family history of early heart disease
  - Younger than 55 years of age in a 1st degree male relative (father, brother, son)
  - Younger than 65 years of age in a 1st degree female relative (mother, sister, daughter)
- Age (men 45 years and older, women 55 years and older)
  - Women with early menopause
- Family history of FH
Other Medical Conditions That May Affect Risk of ASCVD:

- Metabolic Syndrome
- Thyroid disease
- Kidney diseases
- Inflammatory disease (lupus, rheumatoid arthritis)
- Pregnancy-related complications (pre-eclampsia, gestational diabetes or hypertension)
Certain Lifestyle Issues Increase Risk of Developing ASCVD

• **Diet:**
  - A diet high in saturated fat, trans fat and cholesterol can play a role in raising LDL-C
  - A diet high in refined or processed carbohydrates, simple sugars, particularly high fructose, can also contribute to ASCVD

• **Weight**
  - Being overweight or having central obesity (fat around the belly) can increase your LDL-C and your susceptibility to damage from even normal LDL-C levels.

• **Exercise**
  - People who are not very physically active tend to have higher LDL-C and be overweight.

• **Smoking**
  - Tobacco use or exposure to second hand smoke are also risks factors that increase the artery wall’s susceptibility to ASCVD.
Treatment Options to Manage LDL Cholesterol and Lower Overall Risk
Treatment Goals

To reduce your risk of:
• Developing heart and vascular disease
• Suffering a heart attack or stroke
• Death
Lifestyle changes with or without medication therapy — which is recommended for everyone, PLUS:

- Medications (typically statins)
- Management of other factors that increase your risk of heart disease (e.g., blood pressure, blood sugar)

Treatment strategy should be a joint decision between you and your healthcare provider about how to best decrease your risk and prevent heart attack and stroke.
Lifestyle Changes

• Eat a heart-healthy diet
  – Meet with a registered dietitian if needed
• Be physically active and maintain a healthy weight (moderate activity most days of the week)
• Avoid tobacco products and secondhand smoke
Lifestyle Changes — Eat a Heart-healthy Diet

Eat a variety of:

– Fresh fruits, vegetables
– Whole grains and other high-fiber foods
– Low-fat dairy products
– Poultry and fish
– Legumes
– Nuts, olive and seed oils (in small amounts)

And limit:

– Highly processed carbohydrates
– Sweets
– Sugar-sweetened beverages, especially those with high fructose corn syrup
– Beef and pork
– Saturated fats (to no more than 5-6 percent of total caloric intake)
– Trans fats (eliminate)
– Sodium
– Alcohol

Helpful plans for heart-healthy eating including the DASH diet and TLC diet: www.CardioSmart.org/eathealthy
Lifestyle Changes — Be Physically Active

- Regular physical activity can help lower cholesterol and blood pressure.
- Aim to exercise:
  - 3 – 4 times a week
  - 40 minutes per session
- Examples of moderate activity: brisk walking, swimming, gardening.
- Talk with your clinician about an exercise program.
- Any amount of exercise may help.
Other Treatment Strategies

Statins are recommended for the following individuals:

- Persons with known ASCVD to prevent future heart attack, stroke, or other problems
  - Treatment with statins is generally recommended regardless of baseline LDL-C in patients with ASCVD.
- Baseline LDL-C 190 mg/dL or higher
- Familial Hypercholesterolemia
  - Many patients will need combination therapy.
- Persons with diabetes
- Persons who do not have these conditions, but who have an increased risk of developing ASCVD
  - The new “CV Risk Estimator”, introduced in 2013, can help predict your risk and guide therapy.
Using the CV Risk Calculator

ASCVD Risk Estimator

- For patients who don't have ASCVD or LDL 190 mg/dL or more, the clinician may use the ASCVD Risk Estimator to help determine a patient's short-term and long-term risk for ASCVD.
- The clinician will put patient-specific information into the tool.
- The tool will estimate 10-year (short-term) and 30-year (long-term) risk.
- This tool is available on the Internet, if you want to put in your own information.
High-risk Patient

ASCVD Risk Estimator*

10-Year ASCVD Risk  
14.5% calculated risk  
5.8% risk with optimal risk factors**

Lifetime ASCVD Risk  
⚠️ Lifetime Risk Calculator only provides lifetime risk estimates for individuals 20 to 59 years of age.

Recommendation Based On Calculations:

- Total Cholesterol (mg/dL): 234
- HDL-Cholesterol (mg/dL): 57
- Systolic Blood Pressure: 142
- Treatment for Hypertension: Y

Based on the data entered (assuming no clinical ASCVD and LDL-C 70-189 mg/dL):

- Gender: Female
- Age: 67
- Race: African American
- Total Cholesterol: 234
- HDL-Cholesterol: 57
- Systolic Blood Pressure: 142
- Hypertension Treatment: Yes
- Diabetes: No
- Smoker: No

Moderate to High-Intensity Statin Recommended

Before initiating statin therapy, it is reasonable for clinicians and patients to engage in a discussion.
Patient with High Lifetime Risk

Based on the data entered (assuming no clinical ASCVD and LDL-C 70-189 mg/dL):

- Gender: Female
- Age: 47
- Race: White/Other
- Total Cholesterol: 284
- HDL-Cholesterol: 48
- Systolic Blood Pressure: 138
- Hypertension Treatment: Yes
- Diabetes: No
- Smoker: No

Not In Statin Benefit Group Due To 10-Year ASCVD Risk <5%

In individuals for whom after quantitative risk assessment a risk-
Medications — Statins

Statins are the drug treatment of choice, in combination with lifestyle changes

- Scientific evidence supports use of statins to reduce the risk of cardiac events like heart attack, stroke and related death

Statins are thought to reduce the risk of ASCVD by means of several possible mechanisms:

- Decrease amount of cholesterol made in the liver
- Increase the removal of cholesterol particles from the blood
- Reduce cholesterol in plaque
- Reduce inflammation of plaque
- Stabilize the plaque, preventing it from rupturing, breaking away, forming a clot, and blocking the artery
Considerations When Starting a Statin

Before starting a statin, you and your clinician will consider together:

• Your overall risk for ASCVD and the goals for therapy
  – Consider 10-year and lifetime risk
• Your treatment options
• Possible interactions with other medications you take
• Your preferences and concerns about your treatment
• You should not take statins if you are pregnant, breastfeeding, or planning to get pregnant.
• Possible side effects
Types of Statins

- Atorvastatin (Lipitor®)*
- Fluvastatin (Lescol®)*
- Lovastatin (Mevacor®, Altoprev®)*
- Pitavastatin (Livalo®)
- Pravastatin (Pravachol®)*
- Rosuvastatin (Crestor®)
- Simvastatin (Zocor®)*

*Available as generic
Side Effects/Risks

• In general, statins are well tolerated and most patients do not have side effects.
  – **Liver**: You may have heard of liver issues, but these are very rare. The FDA and cholesterol guidelines do not recommend routine monitoring of liver tests.
  – **Muscle**: Muscle aches and cramps may occur in a minority of patients. If this occurs, your provider may recommend an alternative statin. Serious muscle issues are rare and guidelines do not recommend routine monitoring of muscle enzyme tests.
  – **Diabetes**: There is a slight increased risk of being diagnosed with diabetes, especially in patients with pre-diabetes or on maximum doses of potent statins. However, ASCVD risks remain lower on statin therapy even if diabetes develops.
  – **Memory loss**: In large statin trials there has been no conclusive evidence of memory loss.

• Contact your clinician if you are concerned that you are having a side effect from your medication.

• Statins should not be used if you are pregnant or trying to get pregnant.
If You Have Trouble Taking Statin Therapy

Your clinician may ask you to do one or more of these things:
• Stop your statin to see if the symptoms resolve.
• Order a blood test to see if there may be another cause of your symptoms.
• Lower the dose of the statin you are taking.
• Change to a different statin.
• Prescribe alternative dosing schedule.

The goal is to keep you on a statin if you need it to reduce ASCVD risk. Different statins have different potencies, strengths, and potential side effects. Talk with your clinician about any concerns.
Other non-statin medications may be prescribed either:
• Alone
• In combination with the statin
• In combinations of 2 or more non-statins

May be considered:
• For patients with high risk of heart disease who may benefit from more aggressive therapy
• Patients with FH or severe hypercholesterolemia (LDL-C 190 mg/dL or more)
• Patients who cannot take any statin at any dose
• Patients who don’t get the expected response to statin and lifestyle modifications

Non-statin medications may include:
• Bile acid sequestrants or resins
• Cholesterol absorption inhibitor
• Fibrates
• Nicotinic acid
• Plant sterol/stanols (dietary supplements)
Medication Adherence — Staying Medication Safe

It is important to:

• Take your medications as prescribed
  – Do not skip doses or alter the timing without talking to your healthcare provider.

• Consult your clinician before starting, changing, or stopping a prescription or over-the-counter medication

• Report any suspected side effects or concerns

• Keep an updated list of all of the medications and herbal or dietary supplements you take (including the dose and frequency)
  – Include over-the-counter medications and herbal remedies or dietary supplements.
  – Review this list regularly with all of your health care providers.
Your Healthcare Team & Preparing for Appointments
Your Healthcare Team

• Internal medicine/Primary care provider
• Cardiologist, Endocrinologist, and/or Lipidologist
• Nurse, Nurse Practitioner, Physician Assistant and Pharmacist
• Dietitian
• Caregiver
• You
Your primary care doctor can help:

• Monitor your overall and heart health
• Order additional tests to understand your overall heart health
• Give you tips about reducing your risk of disease progression, heart attack, stroke or related death
• Choose treatments that match your treatment goals and lifestyle needs
• Make a referral to a cardiologist — a doctor who specializes in diseases of the heart and blood vessels
• Make a referral to a lipidologist — a doctor who specializes in lipid or cholesterol disorders
Your Cardiologist

If you have or are at high risk for ASCVD, your cardiologist will:

• Work with your family doctor to help manage your heart and vascular health
• Order additional tests to understand your overall heart health
• Give you tips about reducing your risk of disease progression, heart attack, stroke or related death
• Choose treatments that match your treatment goals and lifestyle needs
Your NP or PA or pharmacist is an important part of your care team who will:

• Work closely with your doctors and help coordinate your care
• Order and interpret tests
• Prescribe medications as indicated
• Provide information about lifestyle changes and medications
• Check for potential drug-drug or drug-food interactions
• Emphasize the importance of follow-up visits
A dietitian is an expert in diet and nutrition who will:

- Assess your eating habits by interview or by having you keep a food diary
- Offer strategies and tips to adopt and stick to a heart-healthy diet
- Explain why certain foods raise cholesterol and other heart disease risk factors
- Work with you to come up with creative recipes/menus and meals that you will still enjoy
Caregiver

A trusted friend or family member can:

• Provide support and encouragement.
• Support you as you make important lifestyle changes.
• Help you manage your medications.
• Help you follow your doctor’s instructions and make treatment decisions.
• Make a list of any concerns/questions you want to ask during the office visit.
• Review any test or lab results; bring previous test results with you for the office visit.
• Bring an updated list of all your prescriptions, over-the-counter medications, and herbal remedies or dietary supplements, with doses and frequencies of use.
• Ask a trusted friend or family member to go with you to help you remember what was said and ask questions you may not have considered.
• Take notes during your visit.
Before your appointment, write down a list of questions or concerns you would like to discuss with your clinician.

For example:

- What is my overall risk of heart disease?
- What changes can I make to be healthier and lower my risk of heart disease or stroke?
- Should I take a medication to lower my risk of heart disease or stroke?
- What should I watch for and report while I am taking the medication?
Discussing how you are doing with your treatment plan, including:

- Heart-healthy lifestyle changes
  - Diet
  - Exercise
- Taking medications as prescribed

Your response to statin therapy:

- Your clinician will evaluate how much your LDL cholesterol has been reduced from baseline.
- Fasting lipid panel may be ordered:
  - At 4 – 12 weeks of starting therapy or after changing the dose
  - Every 3 – 12 months subsequently
Everyday Steps for Reducing Risk of Heart Disease
In Summary, Steps You can Take to Reduce Your Risk of Heart Disease

• Adopt a heart healthy lifestyle, including
  – Eat a heart-healthy diet, exercise, maintain a healthy weight and avoid tobacco and second hand smoke

• Manage your other risk factors
  – Blood pressure and blood sugar

• Take your medications as prescribed

• Discuss any concerns with your clinician

• Make it a family affair — ask loved ones to support you in making and sticking with lifestyle changes — they may benefit too! Be aware of your family’s medical history, especially if high cholesterol and/or heart disease run in the family.
Resources for Support and Information
Resources

- **CardioSmart.org**
- LDL: Address the Risk (cardiosource.org/ldl)
- “Learn Your Lipids” (www.learnyourlipids.com)
- The Familial Hypercholesterolemia (FH) Foundation (www.theFHfoundation.org)
Thank You!

- Meet your peers and share stories
- Introduce yourself to others
- Browse resources available to you