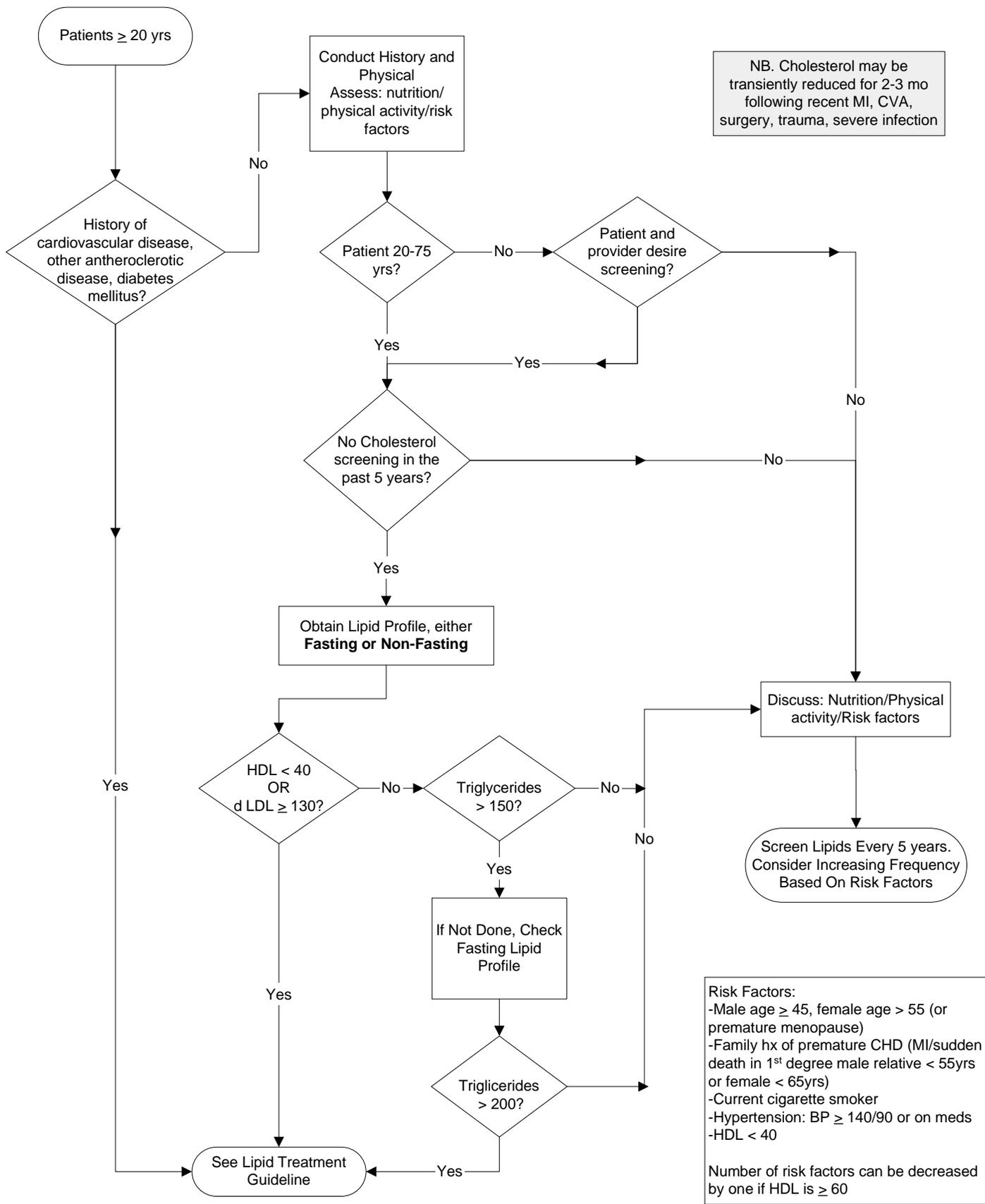




## LIPID SCREENING AND COUNSELING FOR ADULTS

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# Lipid Screening and Counseling for Adults



This guideline is designed for general use for most patients but may need to be adapted to meet the special needs of a specific patient as determined by the patient's provider.



## LIPID SCREENING AND COUNSELING FOR ADULTS

### Patient criteria and frequency for routine screening

The National Cholesterol Education Program (NCEP) Adult Treatment Panel (III) advocates cholesterol screening in all adults 20 years and older at least every 5 years. There is not a large amount of evidence to support the treatment of dyslipidemia with drug therapy in men ages 20-34 years, in women ages 20-44 years, or in men and women over age 75 years. The primary prevention of coronary heart disease (CHD) is based on lifestyle changes such as reduced intake of saturated fat and cholesterol, increased physical activity and weight control. It is felt that early identification of individuals at increased risk for CHD will assist in addressing these lifestyle changes. Some studies have demonstrated an association between cholesterol and coronary artery disease that persists to age 74 years, suggesting that continued screening and treatment might be beneficial. At the time of screening an assessment of diet, activities, and other risk factors should be done. Counseling on nutrition, exercise, and modifiable risk factors should be performed on screening and when lab results are communicated. (1,2)

### Patients who do not qualify for routine screening

1. Patients whose health status or life expectancy would not benefit from knowledge of their lipid status (e.g., those with terminal cancer, or other endstage disease) should not undergo routine screening.
2. Patients with diseases that require more frequent screening and aggressive lipid management (3):
  - *Coronary Artery Disease*: (angina pectoris, history of myocardial infarction, history of CABG or history of angioplasty, stent or atherectomy, or angiography revealing > 50% stenosis)
  - *Peripheral Vascular disease*: (Abdominal aortic aneurysm, positive non-invasive evaluation (Ankle/Brachial Index), positive angiogram, symptoms of claudication)
  - *Carotid Disease*: (TIA/CVA with atherosclerosis or evidence on echo/ultrasound/angiogram)
  - *Familial Hyperlipidemia*: Heterozygous familial hypercholesterolemia affects 1 in 500 persons in the general population with the risk of death from CAD increased almost four fold between the ages of 20 and 74. It is associated with high levels of LDL and total cholesterol and an elevated risk for coronary heart disease. Major features of the disorder include its autosomal inheritance pattern and the presence of tendinous xanthomas.
  - *Diabetes*: There is abundant evidence that the typical dyslipidemia associated with insulin resistant states and diabetes is highly atherogenic. The dyslipidemia is characterized by low HDL, elevated triglycerides, and highly atherogenic small and dense LDL particles. Complications of atherosclerotic macrovascular disease account for the majority of deaths and a disproportionate amount of morbidity in people with diabetes. Patients with insulin resistance and diabetes require aggressive management.

### Screening and Interpretation of the Fasting Lipid Profile

The NCEP (III) suggests screening with a fasting lipoprotein profile. While this is the most effective way to assess triglyceride levels, it can be more inconvenient for patients compared to obtaining a random lipoprotein profile. The LDL is the primary test for directing therapy. At the time of the release of the NCEP (III), obtaining a direct measure of the LDL was expensive and the LDL was normally calculated using the triglyceride level. A fasting lipoprotein profile was required to calculate the LDL. Since then, the cost of obtaining a direct LDL has dropped and it is readily obtained from a non-fasting patient. To improve the rates of screening, it is recommended that a lipoprotein profile be drawn, regardless of the fasting state of the patient. If the triglycerides are elevated (>150), it is recommended that a 12 hour fasting lipoprotein profile be done, if it has not already be evaluated.

In certain circumstances, the cholesterol level may be transiently reduced. These include recent MI, CVA, surgery, trauma, severe infection, pregnancy and lactation. Screening should be done within 8 hours of the event or delayed for 2-3 months.

The NCEP (III) emphasizes the importance of assessing the risk of the development of CHD through tallying major risk factors for CHD and estimating 10-year CHD risk. The purpose is to target intensive treatment to people who are at higher risk. Similarly, the risk factors can be used in assisting screening, in that discussion of risk factors should take place when screening and reviewing results with patients. Patients with major risk factors who have high normal lipids may be considered for screening more frequently than 5 years.

## Coronary Artery Disease Risk Factors Assessment (1)

### Positive Risk Factors

- Age > 45 for men, or > 55 for women, or premature menopause without estrogen replacement
- Family history of CAD at an early age; Myocardial infarction or sudden death before age 55 in father or other first degree male relative, or before age 65 in mother or other female first degree relative.
- Current cigarette smoker
- Hypertension - blood pressure > 140/90 mm Hg, or using antihypertensive medications
- HDL cholesterol < 40 mg/dL

### Negative Risk Factors

- HDL cholesterol > 60mg/dL is a protective factor

### Criteria for further evaluation and treatment

Individuals with LDL > 130 mg/dL, HDL < 40 mg/dL, or triglycerides > 200 mg /dL are at higher risk for

myocardial infarction or sudden death. Providers should refer to the lipid treatment guidelines for management of these patients. Patients with triglyceride levels between 150 and 400 mg/dL may have other comorbid conditions (e.g., diabetes) and warrant further investigation.

### LIFESTYLE MODIFICATIONS and RISK FACTOR REDUCTION

A healthy lifestyle including appropriate nutrition and physical activity and risk factor reduction or avoidance should be encouraged in all patients.

#### Weight Management/Reduction

Obesity frequently elevates cholesterol levels in both very-low-density lipoprotein (VLDL) and LDL fractions, raises triglyceride levels, lowers HDL cholesterol levels, raises blood pressure and promotes glucose intolerance. Weight loss lowers total cholesterol and its LDL and VLDL fractions, lowers triglycerides and raises HDL cholesterol. Weight loss also lowers blood pressure and improves glycemic control (6).

Obesity experts have abandoned the concept of “ideal” or “desirable” weight (which is usually neither necessary nor attainable) in favor of the term “healthier weight”, defined as the weight at which the complications of obesity are reduced or avoided. For many patients, a 5% to 10% change is achievable and adequate (No more than 1-2 pounds/week). Treatment of obesity includes lifestyle modification of nutrition and diet habits, lifestyle modification of physical activity habits, and modulation of calorie intake and energy expenditure, assistance from food for special dietary purposes. In certain situations pharmacotherapy may be indicated to supplement lifestyle changes. Because successful weight loss is slow and frustrating, treatment approaches are targeted to motivation efforts and skills required for compliance. This includes a shift away from a focus on weight loss toward improvements in functional status, sleep quality, and an overall sense of vitality.

#### Physical Activity

Patients are more likely to comply with physical activity programs that are tailored to meet individual goals, interests and needs. Most patients benefit from aerobic physical activity that targets large muscle groups (walking, jogging, cycling), performed for 30-60 minutes (duration depends on intensity of exertion), four or more times a week. Overweight patients should engage in low-intensity activity frequently and for longer durations. (6) Patients should also be encouraged to incorporate physical activity into their daily lifestyle activities (e.g. walking or cycling to work, walking breaks at work, using stairs, gardening, household work) Patients should be shown how to measure their pulse. An aerobic target heart rate in patients not on beta-blockers will be calculated  $(220 - \text{age}) \times 0.65 = \text{beats per minute}$ . Compliance with physical activity should be evaluated at each visit.

**Exercise Treadmill Testing:** The American College of Cardiology/American Heart Association Guidelines for Exercise Testing (July 1997) does not endorse or criticize an Exercise Treadmill Test (ETT) in asymptomatic individuals without CAD before beginning an exercise program. Asymptomatic individuals who may obtain useful prognostic information from exercise testing include:

1. Persons with 2 or more risk factors (as listed above)
2. Asymptomatic men older than 40 years and women older than 50 years:
  - a. Who plan to start vigorous exercise (especially if sedentary)
  - b. Who are involved in occupations in which impairment might impact public safety
  - c. Who are at high risk for CAD due to other diseases (e.g. , chronic renal failure) (7)

## Nutrition

Patients are more likely to use nutrition information that is tailored to the individual. Initial nutrition education should be done through the provider and case manager. Patients should be seen by the case manager every 4-6 weeks to assess compliance with dietary changes. If the patient does not seem to be achieving the set goals after 6 months a referral to outpatient nutrition services would be appropriate. However referral to the **dietitian or nutrition education classes** is acceptable at any point, call **729 2689**. Refer patients also to various web sites that have recommendations on healthy nutrition; the American Heart Association [www.americanheart.org](http://www.americanheart.org), Shapeup America at [www.shapeup.com](http://www.shapeup.com), and the American Dietetic Association, [www.eatright.org](http://www.eatright.org).

In the average American diet, fat comprises about 35% of total calories, with total saturated fat accounting for 14 percent. Cholesterol intake averages about 360 mg per day in American men; less in American women. Clinical trials show that lipid-lowering effects of dietary measures are greatest in persons with higher initial values of total cholesterol, LDL, and triglycerides. The American Heart Association dietary guidelines for healthy Americans (these are the same as the NCEP Step I diet) recommend the following:

- Total fat intake should be no more than 30 percent of total calories
  - Saturated fatty acids intake should be no more than 8-10 percent of total calories
  - Polyunsaturated fatty acid intake should be no more than 10 percent of total calories. Omega-3 fatty acids, which are polyunsaturated fatty acids found in many fish, have been shown to reduce serum triglyceride concentrations but minimal effect on LDL in those with normal triglycerides. Polyunsaturated fats are also found in seal and whale blubber.
  - **Monounsaturated fatty acids should be no more than 15 percent of total calories.** Monounsaturated fats, such as those found in peanuts, almonds and canola oil have less adverse effect on HDL cholesterol than polyunsaturated fats
  - **Cholesterol intake should be less than 300 milligrams per day**
  - Carbohydrate intake should make up 55-60 percent or more of calories, with emphasis on increasing sources of complex carbohydrates
  - Total calories should be adjusted to achieve and maintain a healthy body weight
- Soluble fiber has been shown to modestly reduce total cholesterol and LDL cholesterol levels. Current dietary guidelines recommend a total daily fiber intake of at least 20 to 30 g for adults, with 25 percent of the fiber being soluble fiber. These levels can be attained with six or more daily servings of grain products and five or more daily servings of fruits and vegetables. Adding 3g per day of soluble fiber from oat bran can reduce total cholesterol by 5-6 mg per dl. Higher daily intake of soluble fiber promotes a further modest reduction. (6)

## Smoking Cessation

In addition to being an independent risk factor for coronary artery disease, cigarette smoking is associated with changes in the lipoprotein distribution and other metabolic factors that promote atherogenesis. Nicotine stimulation of sympathetic nervous system activity results in elevation of plasma free fatty acids and VLDLs. Smoking also clearly reduces HDL cholesterol. Smoking cessation trials have documented a significant rise in HDL after smoking cessation. Cigarette smoking in women is associated with earlier menopause and lower estrogen levels which contribute to an increased CAD risk. If patient demonstrates interest in quitting tobacco, start them in the **Smoking Cessation Program** offered through Health Information. This involves talking with a tobacco cessation counselor and the possible use of a number of aids, such as Zyban, the nicotine patch, inhaler or gum, or the use of acupuncture to assist with efforts to quit tobacco.

## Alcohol

Alcohol exerts several effects on lipid levels, which include raising triglyceride and HDL levels. It has minimal effect on LDL. It is not advocated for use in prevention of coronary artery disease.

## Antioxidants

Oxidation and glycosylation of LDL cholesterol promotes atherogenicity. Several vitamins, including vitamin C, E and beta-carotene, have antioxidant properties which may provide protection against atherogenesis. Fruits, dark green and deep yellow vegetables are rich sources of antioxidant vitamins. (6)

## Hypertension

Hypertension is defined as blood pressure > 135/85 mm Hg in patients with diabetes, target organ damage, or cardiovascular disease, > 140/90 mm Hg in others, or taking any antihypertensive medications. If uncontrolled, hypertension can lead to endothelial damage, atherogenesis and stroke. Refer to the hypertension treatment guidelines based on JNC VI for management of these patients.

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