BHICCI

Cholesterol Screening and Monitoring

General

In 2013, the American College of Cardiology/American Heart Association (ACC/AHA) treatment guideline updated the 2004 Adult Treatment Panel III (ATP III) guidelines. The most significant changes in the 2013 ACC/AHA guideline are the focus on statin treatment intensities rather than discrete Low Density Lipoprotein (LDL) targets and the use of a new Pooled Cohort risk calculater rather than the modified Framingham Risk Score calculator. These changes have not been without some controversy, especially the concern that the new Pooled Cohort calculator may be overestimating risk in those without ASCVD[1]. A summary and comparison between guidelines can be found in a recent review by Nayor and Ramachandran[2]. In 2016, the US Preventive Services Task Force (USPSTF) relaseasd recommendations largely in-line with the ACC/AHA guidelines but recommended increasing the Pooled Cohort risk threshold for initiating statin therapy in patients without ASCVD from 7.5% to 10%.

The following guideline summarizes the 2013 AHA/ACC guideline and highlights the potentially higher threshold for initiating a statin as described by the USPSTF.

Candidates for Screening

≥ 21 y/o and has ≥ 1 risk factors	No risk factors
• On Second Generation Antipsychotic[3] • Smoker • Hypertension • Diabetes Mellitus I or II • Obese (BMI > 30) • Clinical ASCVD • Significant FH of ASCVD • On statin therapy	• Men: start at 35 • Women: start at 45 • There is no optimal interval for screening, depending on how close or far the levels are to warranting therapy.

Labs Ordered (fasting preferred but not necessary)

Lipid Panel: Total Cholesterol (TC), High Density Lipoprotein (HDL), Low Density Lipoprotein (LDL), Triglyceride (TG)
Aspartate aminotransferase (ALT) alone or as part of liver functions tests (LFTs)
HgA1c (if diabetes mellitus status unknown)

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[1] ASCVD: Arteriosclerotic cardiovascular disease including acute coronary syndromes, history of MI, stable or unstable angina, coronary revascularization, stroke, or TIA presumed to be of atherosclerotic origin, and peripheral arterial disease or revascularization

[2] Nayor M, Ramachandran VS. Recent Update to the US Cholesterol Treatment Guidelines: A Comparison with International Guidelines. Circulation. 2016;133:1795-1806.

[3] olanzapine, clozapine, risperidone, quetiapine, ziprasidone, aripiprazole, asenapine, paliperidone, lurasidone

Interpretation of Lab Results

Refer for work up of secondary causes:

1. TG ≥ 500
2. ALT > 3x upper limits of normal

Interpretation for statin therapy depends on the Statin Benefit Group:

Statin Benefit Group	ASCVD Risk Calculation	Intervention
LDL ≥ 190 *or* non-HDL ≥ 220	Not Applicable	HIGH intensity statin and work up for secondary causes
Clinical ASCVD	Not Applicable	HIGH intensity statin
Diabetes (40-75 y/o**)	10 y risk < 7.5%* 10 y risk ≥ 7.5%*	MODERATE intensity statin HIGH intensity statin
No Diabetes or ASCVD (40-75 y/o**)	10 y risk = 5-7.5%* 10 y risk ≥ 7.5%*	MODERATE intensity statin MODERATE TO HIGH Intensity statin

* reasonable to use 10% as a cutoff as described by the USPSTF

** less data available on benefit of initiating a statin in individuals > 75 y/o without ASCVD

ASCVD Calculator (http://clincalc.com/Cardiology/ASCVD/PooledCohort.aspx) and in App Store

Data needed for ASCVD risk calculation:

1. Gender	2. Age
3. Ethnicity (white, African American, other)	4. Total Cholesterol
5. HDL	6. Systolic Blood Pressure
7. Hypertension status	8. Diabetes status
9. Smoking status	

Statin Initiation

Discuss benefit in reducing long-term reduction in ASCVD risk by starting statin and self-management of modifiable ASCVD risk factors (smoking, obesity)

Statin Intensities

HIGH Intensity Lowers LDL ≥ 50%	MODERATE Intensity Lowers LDL 30-50%	LOW Intensity Lowers LDL < 30%
Atorvastatin 40-80 mg	Atorvastatin 10-20 mg Simvastatin 20-40 mg Pravastatin 40-80 mg Lovastatin 40 mg	Simvastatin 10 mg Pravastatin 10-20 mg Lovastatin 20 mg

1. Statins should be taken in the evening except Atorvastatin which can be taken anytime
2. Start at target dose, titration not necessary. If not tolerating, try lower dose, intensity
3. Statins contraindicated in pregnancy

If myalgias, hold statin and check (CK) Creatine Kinase. If > 10 x reference limit, discontinue statin. If CK normal but myalgias continue, consider lower statin intensity.

Statin Monitoring
Repeat Lipid Panel in 3 months and then yearly to assess for adherence and expected level of LDL reduction

Secondary Causes for Hyperlipidemia		
Secondary Cause	**Elevated LDL**	**Elevated Triglycerides**
Diet	Saturated or *trans* fats, weight gain, anorexia	Weight gain, very low-fat diets, high intake of refined carbohydrates, excessive alcohol intake
Drugs	Diuretics, cyclosporine, glucocorticoids, amiodarone, antipsychotics	Oral estrogens, glucocorticoids, bile acid sequestrants, protease inhibitors, retinoic acid, anabolic steroids, sirolimus, raloxifene, tamoxifen, beta blockers (not carvedilol), thiazides
Diseases	Biliary obstruction, nephrotic syndrome	Nephrotic syndrome, chornic renal failure, lipodystrophies
Disorders and altered states of metabolism	Hypothyroidism, obesity, pregnancy	Diabetes (poorly controlled), hypothyroidism, obesity, pregnancy

References:

Stone NJ, Robinson JG, Lichtenstein AH, Bairey Merz CN, Blum CB, Eckel RH, Goldberg AC, Gordon D, Levy D, Lloyd-Jones DM, McBride P, Schwartz JS, Shero ST, Smith SC Jr., Watson K, Wilson PWF. 2013 ACC/AHA guideline on the treatment of blood cholesterol to reduce atherosclerotic cardiovascular risk in adults: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. J Am Coll Cardiol 2014;63(25, Part B):2889–2934

Statin Use for the Primary Prevention of Cardiovascular Disease in Adults: Preventive Medication https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/statin-use-in-adults-preventive-medication1?ds=1&s=cholesterol