Treatment for Lipid Disorders

Physician’s Treatment Guide

LIPID DISORDER CONTRIBUTING FACTORS TREATMENT CONSIDERATIONS

Elevated LDL Cholesterol

LDL is one of the classes of lipoproteins that transports cholesterol to tissues and organs. Lowering LDL-C is a primary focus of the NCEP-ATP III and 2013 ACC/AHA ASCVD Risk and Treatment Guidelines. Elevated LDL-C is an independent risk factor for CVD and associated with a 1.6x increased risk in CVD events.

CONTRIBUTING FACTORS
- Genetic predisposition
- High consumption of saturated fats
- Overweight or obesity
- Sedentary lifestyle
- Illness: Nephrotic syndrome, hypothyroidism, cystic fibrosis
- Drugs: Androgens, progestins, thiazide diuretics, cyclosporines, tacrolimus, sirolimus absorption inhibitors

TREATMENT CONSIDERATIONS
- Cardio-protective diet
- Restricted saturated fat
- Fat weight loss
- Statins
- Nicotinic acid
- Bile acid sequestrants

Low HDL Cholesterol

HDL is the major class of lipoproteins that facilitates cholesterol transport from cells, plasma cholesterol esterification, cholesterol transfer to other lipoproteins, and cholesterol transfer to the liver for excretion (reverse cholesterol transport). Low HDL-C is a secondary focus of NCEP-ATP III guidelines. Low HDL-C is independently associated with a 1.7x to 2.4x increased CVD risk.

CONTRIBUTING FACTORS
- Genetic predisposition
- High triglycerides
- High consumption of simple carbohydrates
- Overweight or obesity
- Sedentary lifestyle
- Insulin resistance/diabetes mellitus
- Smoking
- Illness: Liver, kidney, and thyroid disease
- Drugs: Non-selective beta blockers, androgens, progestins, isotretinoin

TREATMENT CONSIDERATIONS
- Cardio-protective diet
- Fat weight loss
- Regular aerobic exercise
- Smoking cessation
- Correct insulin resistance
- Control diabetes mellitus
- Nicotinic acid
- Fibrates
- Thiazolidinediones
- Omega-3 fish oil
- Some statins
### Elevated Triglycerides

**CONTRIBUTING FACTORS**
- Genetic predisposition
- High consumption of simple carbohydrates and saturated fats
- Overweight or obesity
- Sedentary lifestyle
- Illness: Hypothyroidism, renal failure, excess alcohol intake
- Pregnancy and lactation
- Smoking
- Drugs: Androgens, estrogens, β-blockers, thiazide diuretics, glucocorticosteroids, cyclosporines, protease inhibitors, tacrolimus, sevoflurane, isotretinoin, valproate

**TREATMENT CONSIDERATIONS**
- Regular aerobic exercise
- Fat weight loss
- Avoid high glycemic foods
- Low simple carbohydrate and saturated fat diet
- Avoid alcohol consumption
- Fibrates
- Nicotinic acid
- Omega-3 fish oil
- Thiazolidinediones (rosiglitazone but not pioglitazone)
- Some statins
- Treat levels >500 mg/dL to help prevent acute pancreatitis

### Pattern B Phenotype/Decreased LDL Peak Size

**CONTRIBUTING FACTORS**
- Genetic predisposition
- High consumption of simple carbohydrates
- Overweight or obesity
- Sedentary lifestyle
- High triglycerides and low HDL-C
- Insulin resistance/diabetes mellitus/metabolic syndrome
- Non-selective beta blockade

**TREATMENT CONSIDERATIONS**
- Consider evaluation of cardio-metabolic function
- Noninvasive imaging
- Additional blood tests
- Avoid simple carbohydrate diet
- Fat weight loss
- Regular exercise
- Identify and correct insulin resistance
- Thiazolidinediones
- Control diabetes mellitus
- Nicotinic acid
- Fibrates
- Statins (minor effect)
- Omega-3 fish oil

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### LIPOPROTEIN SUBFRACTION DISORDERS

**Pattern B Phenotype/Decreased LDL Peak Size**

Pattern B is described as a predominance of Small LDL subclass particles as represented on the Ion Mobility patient result figure. Pattern B represents an atherogenic lipid profile which is associated with a 1.3x increased risk for CVD.

**DECREASED LDL PEAK SIZE**

Further assessment of pattern includes measurement of peak size. Average size of LDL peak subclass particles measuring less than 218 angstroms, as measured with Ion Mobility, are associated with a 1.35x increased CVD risk.

### Decreased Large HDL

**CONTRIBUTING FACTORS**
- Genetic predisposition
- High triglycerides
- High consumption of simple carbohydrates
- Overweight or obesity
- Sedentary lifestyle
- Insulin resistance/diabetes mellitus
- Smoking
- Illness: Liver, kidney, and thyroid disease
- Drugs: Non-selective beta blockers, androgens, progestins

**TREATMENT CONSIDERATIONS**
- Avoid simple dietary carbohydrates
- Fat weight loss
- Regular exercise
- Smoking cessation
- Correct insulin resistance
- Control diabetes mellitus
- Nicotinic acid
- Nicotinic acid plus statin
- Some statins
- Fibrates when triglycerides are elevated
- Omega-3

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**For a more comprehensive list of medications that may affect any of the assays in this publication, please refer to Goodman and Gilman’s *The Pharmacological Basis of Therapeutics* or other valued source.**
Elevated Triglycerides

**CONTRIBUTING FACTORS**
- Genetic predisposition
- High consumption of simple carbohydrates and saturated fats
- Overweight or obesity
- Sedentary lifestyle
- Illness: Hypothyroidism, renal failure, excess alcohol intake
- Pregnancy and lactation
- Smoking
- Drugs: Androgens, estrogens, beta blockers, thiazide diuretics, glucocorticosteroids, cyclosporines, protease inhibitors, tacrolimus, sevelamer, isoretinoin, valproate

**TREATMENT CONSIDERATIONS**
- Regular aerobic exercise
- Fat weight loss
- Avoid high glycemic foods
- Low simple carbohydrate and saturated fat diet
- Avoid alcohol consumption
- Fibrates
- Nicotinic acid
- Omega-3 fish oil
- Thiazolidinediones (pioglitazone but NOT rosiglitazone)
- Some statins
- Treat levels >500 mg/dL to help prevent acute pancreatitis

**LIPID DISORDER**
A triglyceride is an ester derived from glycerol and three fatty acids. The major lipid in chylomicrons, VLDLs, and IDLs. Hypertriglyceridemia may increase CVD risk. Elevated triglycerides are a secondary focus of NCEP-ATP III guidelines. Elevated triglycerides are a component of the metabolic syndrome and are associated with a 1.7x to 4.0x increased CVD risk.

**LIPROPROTEIN SUBFRACTION**
**Elevated Small and/or Medium Particle Number**
- Genetic predisposition
- High consumption of simple carbohydrates
- Overweight or obesity
- Sedentary lifestyle
- Illness: Nephrotic syndrome, cystic fibrosis
- Drugs: Androgens, progestins, thiazide diuretics, cyclosporines, tacrolimus, sevelamer absorption inhibitors

**TREATMENT CONSIDERATIONS**
- Cardio-protective diet
- Restricted saturated fat
- Statins
- Nicotinic acid
- Bile acid sequestrants

**LIPOPROTEIN LDL PARTICLE NUMBER DISORDER**
Ion mobility measures the number of particles in each of the eight LDL subclasses. These eight subclasses comprise the LDL particle number. An elevated total LDL particle number is associated with a 1.4x increased CVD risk.

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**TREATMENT CONSIDERATIONS**
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**Decreased Large HDL**

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Cardio IQ™ Testing Options from Sonora Quest Laboratories

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*The CPT codes provided are based on AMA guidelines and are for informational purposes only. CPT coding is the sole responsibility of the billing party. Please direct any questions regarding coding to the payor being billed.