CPHCS Care Guide: Hyperlipidemia

GOAL

LDL CHOLESTEROL	Low risk	<160
	Moderate Risk	<130
	High Risk	<130
HDL CHOLESTEROL	Men	>40 mg/dl
	Women	>50 mg/dl
TRIGLYCERIDES	<150 mg/dl	

ALERTS

LDL ≥220 or ≥100, in DM or CAD points

DIAGNOSTIC CRITERIA/EVALUATION

- ✓ Obtain Lipid Panel after 9-12 hours fasting
- ✓ Determine presence of CHD or CHD equivalents (i.e DM, PVD, CAD, CKD, AAA)
- ✓ Determine number of CV risk factors – if ≥2, and no CHD equivalent assess 10 year risk of CHD. (*see Framingham tables or use Framingham calculator to determine risk category)
- ✓ H&P: rule out secondary causes (DM, renal disease, thyroid disorder, obstructive liver disease, drugs, obesity).
- ✓ Baseline labs: UA, TSH, glucose, LFTs, Serum Cr, BUN

TREATMENT OPTIONS

- Initiate therapeutic lifestyle changes (TLC) such as diet, exercise, wt loss if BMI ≥25 if LDL is above goal.
  - ⇒ A 3 month trial of TLC appropriate unless LDL ≥ 220
- Consider adding drug therapy if LDL exceeds goal for patient
  - ⇒ If CHD equivalent may start drug right away, lower risk can try 3 months trial TLC first
- Identify metabolic syndrome and treat, if present, after 3 months of TLC.
- Treat elevated triglycerides as per ATP III algorithm on page 3.

MONITORING

- ♦ Patients on TLC only should have a repeat lipid panel 3 months after TLC initiation.
- ♦ After the initial follow-up visit, patients may be seen at 3 month intervals until target LDL goal is reached.
- ♦ Check LFTs as clinically indicated, usually check 3 mos after reaching maximum statin dose. If LFTs increase, monitor until normalize, if consistently > 3X normal- stop statin.
- ♦ Once at goal, lipids and LFTs should be monitored at 6-12 month intervals.
- ♦ If a patient has achieved treatment goals and is clinically stable on at least 2 consecutive encounters , the patient may be reevaluated every 180 days unless the PCP determines the patient needs more frequent monitoring.

Information contained in the guidelines is not a substitute for a health care professional's clinical judgment. Evaluation and treatment should be tailored to the individual patient and the clinical circumstances. Furthermore, using this information will not guarantee a specific outcome for each patient.

MEDICATIONS:

DRUG CLASS	AGENTS AND DAILY DOSES	LIPID/LIPOPROTEIN EFFECTS	SIDE EFFECTS	CONTRAINDICATIONS
HMG CoA REDUCTASE INHIBITORS (STATINS)	*First line*: **Simvastatin** (Zocor) (20-80 mg) **(20 mg lowers LDL average 35%)** *Second Line:* *Atorvastatin+ (Lipitor)* (10-80 mg) **(20 mg lowers LDL average of 46%)** (+ Will be generic in late 2011 currently nonformulary) **Rosuvastatin*** (Crestor) (10-40 mg) **(20 mg lowers LDL average of 52%)** (* Formulary ($$$) - must have failed 12 wks max dose Simvastatin) *Special Indication:* **Pravastatin** (Pravachol) (20-40 mg) **(20 mg lowers LDL average of 24%)** This is drug of choice if patient on protease inhibitor or other strong CYP34A inhibitor	As a class: LDL-C ↓ 18-55% HDL-C ↑ 5-15% TG ↓ 7-30%	Myopathy Increased liver enzymes	Absolute: Active or chronic liver disease Pregnancy **Drug interactions**: Statins (except pravastatin and rosuvastatin) are metabolized by cytochrome P-450 34A (CYP34A)–so do not give most statins (except pravastatin) with drugs that block CYP34A including: • Protease inhibitors • Macrolide antibiotics • Some anti-fungals • Cyclosporine Use fibrates and niacin with caution
BILE ACID SEQUESTRANTS	Cholestyramine (4-16 g)	LDL-C ↓ 15-30% HDL-C ↑ 3-5% TG No change or increase	Gastrointestinal distress Constipation Decreased absorption of other drugs	Absolute: dysbeta-lipoproteinemia TG >400 mg/dL Relative: TG >200 mg/dL
NICOTINIC ACID	Immediate release (crystalline) nicotinic acid (1.5-3 gm)	LDL-C ↓ 5-25% HDL-C ↑ 15-35% TG ↓ 20-50%	Flushing Hyperglycemia Hyperuricemia (or gout) Upper GI distress Hepatotoxicity	Absolute: Chronic liver disease Severe gout Relative: Diabetes, PUD or Hyperuricemia
FIBRIC ACIDS	Gemfibrozil (600 mg BID)	LDL-C ↓ 5-20% (may be increased in patients with high TG) HDL-C ↑ 10-20% TG ↓ 20-50%	Dyspepsia Gallstones Myopathy	Absolute: Severe renal disease Severe hepatic disease

Major Risk Factors (Exclusive of LDL Cholesterol) That Modify LDL Goals

- Cigarette smoking
- Hypertension (BP >140/90 mmHg or on antihypertensive medication)
- Low HDL cholesterol (<40 mg/dL)*
- Family history of premature CHD (CHD in male first degree relative <55 years;
- CHD in female first degree relative <65 years)
- Age (men >45 years; women >55 years)

** HDL cholesterol >60 mg/dL counts as a "negative" risk factor; its presence removes one risk factor from the total count.*

CPHCS Care Guide: Hyperlipidemia

SUMMARY | DECISION SUPPORT | PATIENT EDUCATION/SELF MANAGEMENT

HYPERLIPIDEMIA

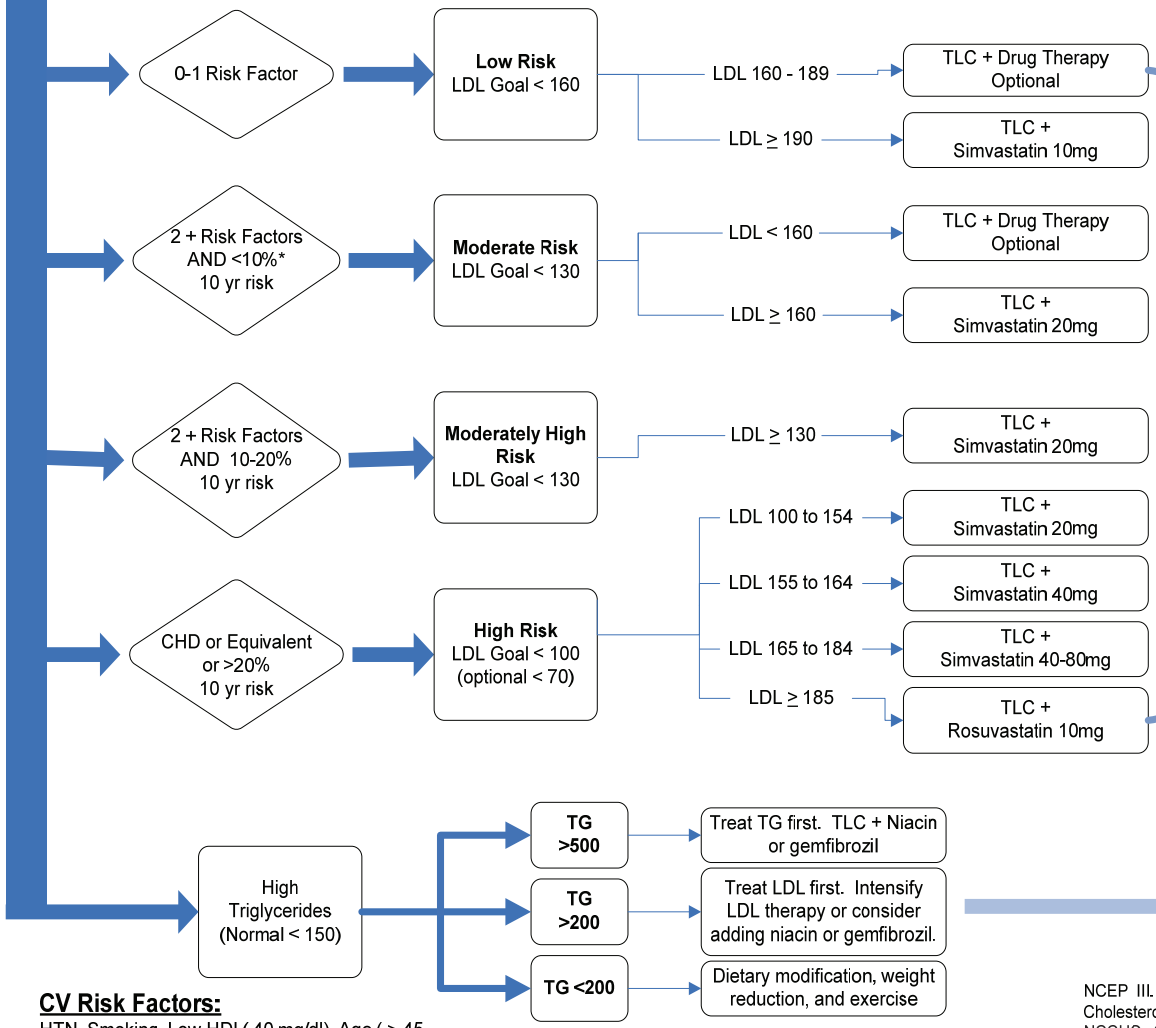
This pathway does not replace sound clinical judgement or apply to all patients

Diagnosis/Assessment

- Step 1: Obtain Lipid Panel after 9-12 hours fasting
- Step 2: Determine presence of CHD equivalents (i.e CAD, Symptomatic Carotid Artery Disease, PVD, AAA, DM) (Some include CKD)
- Step 3 & 4: Determine number of CV risk factors (see below and pg 2) if ≥2, and no CHD equivalent assess 10 year risk of CHD. (*see Framingham tables)
- Step 5: Determine risk category
- Evaluation: H&P: rule out secondary causes (DM, renal disease, thyroid disorder, obstructive liver disease, drugs, obesity).
- Baseline labs: UA, TSH, glucose, LFT's, Scr, BUN, CK.

Therapy

- Step 6: Initiate therapeutic lifestyle changes (TLC) if LDL is above goal.
- A 3 month trial of TLC appropriate unless LDL ≥ 220
- Step 7: Consider adding drug therapy if LDL exceeds goal for patient If CHD equivalent may start drug right away, lower risk can try 3 mos trial TLC first
- Step 8: Identify metabolic syndrome and treat, if present, after 3 months of TLC.
- Step 9: Treat elevated triglycerides.



Follow-Up

- Patients on TLC only should have a repeat lipid panel 3 months after TLC initiation.
- Once medication is started, the first follow-up should be at 2 months with lipid panel and LFTs. Therapy should be adjusted if indicated.
  - Therapeutic Options:
    - 1st line – increase statin dose
    - 2nd line – statin + cholestyramine OR statin + niacin
- After the initial follow-up visit, patients may be seen at 3 month intervals until target LDL goal is reached.
- Check LFT's as clinical indicated, usually check 3 mos after reaching maximum statin dose. If LFT's increase, monitor until normalize, if consistently > 3X normal- stop statin.
- Once at goal, lipids and LFTs should be monitored at 6 month intervals.
- **Patient Education at each encounter:**
  - Reinforce modifiable risk factors:
    - weight loss
    - exercise
    - smoking cessation
    - diet
    - control of comorbidities
  - Reinforce compliance
  - Review medications and side effects

*Pravastatin should be used if CYP450 drug interactions contraindicate the use of simvastatin. It is approximately ½ as potent as simvastatin.

CV Risk Factors:
HTN, Smoking, Low HDL(,40 mg/dl) Age (≥ 45 men, ≥55 women) , FHx of prematiure CHD

NCEP III. Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults. 2002. http://www.nhlbi.nih.gov/guidelines/cholesterol/atp3full.pdf
NCCHC. Clinical Guideline for the Treatment of High Blood Cholesterol. 2005 http://www.ncchc.org/resources/clinicalguides/cholesterol.pdf

10 year Framingham Cardiovascular Risk Factor Table

Estimate of 10-Year Risk for Men

Framingham Point Scores by Age Group

Age	Points
20-34	-9
35-39	-4
40-44	0
45-49	3
50-54	6
55-59	8
60-64	10
65-69	11
70-74	12
75-79	13

Framingham Point Scores by HDL Level

HDL	Points
60+	-1
50-59	0
40-49	1
<40	2

Framingham Point Scores by Systolic Blood Pressure and Treatment Status

Systolic BP	If Untreated	If Treated
<120	0	0
120-129	0	1
130-139	1	2
140-159	1	2
160+	2	3

Framingham Point Scores by Age Group and Total Cholesterol

Total Cholesterol	Age 20-39	40-49	50-59	60-69	70-79
<160	0	0	0	0	0
160-199	4	3	2	1	0
200-239	7	5	3	1	0
240-279	9	6	4	2	1
280+	11	8	5	3	1

Framingham Point Scores by Age and Smoking Status

	Age 20-39	40-49	50-59	60-69	70-79
Nonsmoker	0	0	0	0	0
Smoker	8	5	3	1	1

10-Year Risk by Total Framingham Point Scores

Point Total	10-Year Risk
< 0	< 1%
0	1%
1	1%
2	1%
3	1%
4	1%
5	2%
6	2%
7	3%
8	4%
9	5%
10	6%
11	8%
12	10%
13	12%
14	16%
15	20%
16	25%
17 or more	≥30%

Estimate of 10-Year Risk for Women

Framingham Point Scores by Age Group

Age	Points
20-34	-7
35-39	-3
40-44	0
45-49	3
50-54	6
55-59	8
60-64	10
65-69	12
70-74	14
75-79	16

Framingham Point Scores by HDL Level

HDL	Points
60+	-1
50-59	0
40-49	1
<40	2

Framingham Point Scores by Systolic Blood Pressure and Treatment Status

Systolic BP	If Untreated	If Treated
<120	0	0
120-129	1	3
130-139	2	4
140-159	3	5
160+	4	6

Framingham Point Scores by Age Group and Total Cholesterol

Total Cholesterol	Age 20-39	Age 40-49	Age 50-59	Age 60-69	Age 70-79
<160	0	0	0	0	0
160-199	4	3	2	1	1
200-239	8	6	4	2	1
240-279	11	8	5	3	2
280+	13	10	7	4	2

Framingham Point Scores by Age and Smoking Status

	Age 20-39	40-49	50-59	60-69	70-79
Nonsmoker	0	0	0	0	0
Smoker	9	7	4	2	1

10-Year Risk by Total Framingham Point Scores

Point Total	10-Year Risk
< 9	< 1%
9	1%
10	1%
11	1%
12	1%
13	2%
14	2%
15	3%
16	4%
17	5%
18	6%
19	8%
20	11%
21	14%
22	17%
23	22%
24	27%
25 or more	≥30%

CHOLESTEROL: What You Should Know

Q: What is cholesterol?

A: Cholesterol is a waxy, fat-like substance found in your body.

Q: Why is high blood cholesterol bad for your heart?

A: Having too much cholesterol in your blood stream can clog your arteries. This increases your chances of having a heart attack or stroke.

Q: What is good and bad cholesterol?

A: GOOD CHOLESTEROL (HDL) "H" is for Healthy	**BAD** CHOLESTEROL (LDL) "L" is for Lousy
HDL is "good cholesterol." It helps clean fat and cholesterol from your blood vessels.	**LDL** is "bad cholesterol." It carries cholesterol to your blood vessels, clogging them like rust in a pipe.

Q: What causes high cholesterol?

A: Many things can cause high cholesterol, including:

- Diet. Eating too much saturated fat, trans fat, and cholesterol can raise your cholesterol.
  - Saturated fat, trans fat, and cholesterol are in foods that come from animals (such as meats, whole milk, egg yolks, butter, and cheese), many packaged foods, and snack foods like cookies, crackers, and chips.

Being overweight may raise triglycerides and lower "good" HDL.
- Activity level. Not exercising may raise "bad" LDL and lower "good" HDL.
- Overall health. Diseases such as low thyroid can raise cholesterol. Smoking may lower HDL.
- Age. Cholesterol starts to rise after age 20.
  - In men, it usually levels off after age 50.
  - In women, it stays fairly low until menopause. After that, cholesterol levels rise to about the same levels as in men.
- Family. Some people inherit a cholesterol problem from their parents.

Q: What are the symptoms?

A: High cholesterol doesn't make you feel sick. But if cholesterol builds up in your arteries, it can block blood flow to your heart or brain and cause a heart attack or stroke. By the time you find out you have it, it may already be clogging your arteries.

Q: How is high cholesterol diagnosed?

A: Doctors use a blood test to check cholesterol.

- A simple cholesterol blood test can measure total cholesterol and HDL. You can eat before this test.
- A fasting cholesterol test (also called a lipid panel) is the most complete test. It measures total cholesterol, HDL, LDL, and triglycerides. You cannot have food for 9 to 12 hours before this test.

Q: What are triglycerides?

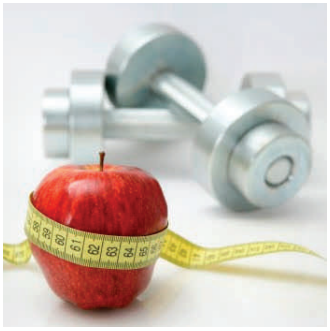
A: Triglycerides are another type of fat found in the blood. When your triglycerides are high, it can raise your risk for heart disease. **A healthy triglyceride level is less than 150 mg/dL.**

Q: How is high cholesterol treated?

A: Your treatment will depend on your lipid levels, your heart disease risk factors, and your general health.

- As a first step, your healthcare team will recommend the lifestyle changes including watching your diet, increasing exercise and maintaining a healthy weight or losing weight if needed.
- If your healthcare team decides that you are at increased risk for heart disease and you need stronger treatment than lifestyle changes, medications can help. Common lipid-lowering medications include:
  - "Statin" drugs, which prevent your liver from manufacturing cholesterol
  - Fibrates
  - Niacin (Vitamin B5)

CHOLESTEROL: What You Should Do

WHAT YOU AND YOUR HEALTHCARE TEAM WILL FOLLOW:	HOW WILL YOU HELP YOURSELF?
Total Cholesterol: My Total Cholesterol:_____ Less than 200 mg/dL: **Ideal** *Good for you!* 200 to 239 mg/dL: **Borderline** *Be alert!* 240 mg/dL or more: **High** *Discuss with your healthcare team!*	**HAVE YOUR BLOOD CHOLESTEROL CHECKED.** •If you are 20 years of age or older, check your cholesterol at least every 5 years. •Your doctor may test you more often if your cholesterol levels are high. •Talk to your doctor about what your cholesterol numbers mean.
LDL (Bad) Cholesterol: My LDL Cholesterol:_____ Less than 100 mg/dL is ideal. *Keep it low!*	**BE MORE PHYSICALLY ACTIVE.** Do 30 to 60 minutes of moderate physical activity on most days.
HDL (Good) Cholesterol:My HDL Cholesterol:_____ Keep it 40 mg/dL or higher. *The higher, the better!*	**AIM FOR A HEALTHY WEIGHT.** Lose weight if you are overweight.
Triglycerides: My triglyceride number: _____ Less than 150 mg/dL. *Keep them low!*	**CUT BACK ON FOODS HIGH IN SATURATED FAT, *TRANS* FAT, AND CHOLESTEROL.** •**Saturated fat** is found in foods such as high-fat meat, cheese, milk, and butter. •***Trans* fat** is found in foods such as vegetable shortening, stick margarine, fried foods, and baked products like cookies, crackers, pies, and pastries
Blood Pressure: BP: _____/_____ BP Goal:_____/_____ **Weight:** My weight: _____ BMI: (18.5-24.9)_____ My goal weight: _____	**HELP PREVENT STROKES AND HEART ATTACKS:** •Don't smoke •Maintain a good blood pressure *My BP goal:* _____ •Eat more fruits, vegetables, and whole grains when possible. •Drink water or sugar-free beverages instead of regular soda
MEDICATION	**METABOLIC SYNDROME**
YOUR DOCTOR MAY ALSO PRESCRIBE CHOLESTEROL-LOWERING MEDICINE. Medication name: _____ Medication dose: _____ 	The metabolic syndrome is a group of factors that increase your chances of developing heart disease or stroke. The metabolic syndrome also increases your risk for diabetes. *Check the factors you have:* • High waist measurement ○ More than 35 inches for women ○ More than 40 inches for men • High triglyceride level of 150 mg/Dl or more • Low HDL (good) cholesterol level ○ Less than 50 mg/dL for women ○ Less than 40 mg/dL for men • Blood pressure of 130/85 or more • High fasting blood sugar of 100 mg/dL or more **IF YOU DO HAVE THREE OR MORE OF THESE FACTORS, TALK TO YOUR DOCTOR ABOUT THE METABOLIC SYNDROME.**