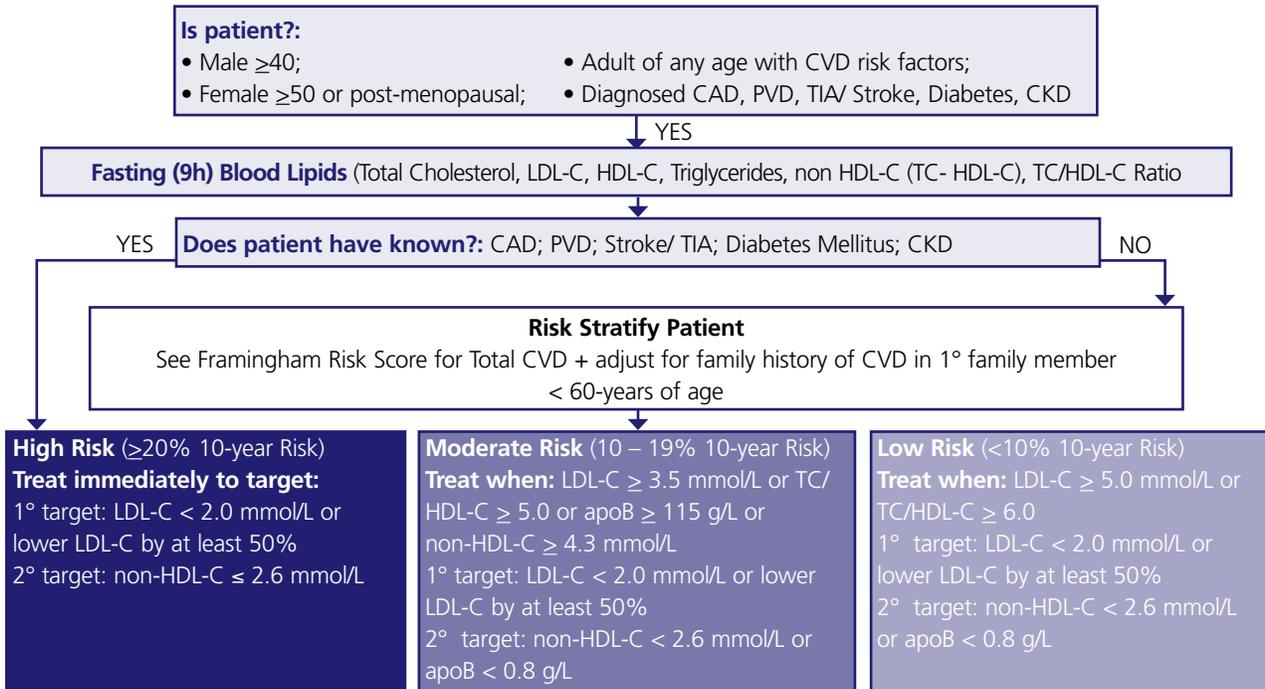




# CHOLESTEROL/ DYSLIPIDEMIA

Source: J. Genest, R. McPherson, J. Frohlich, et al. 2009 Canadian Cardiovascular Society/Canadian guidelines for the diagnosis and treatment of dyslipidemia and prevention of cardiovascular disease in the adult - 2009 recommendations. Can J Cardiol 2009; 25(10):567-579.<sup>9,37</sup> Note: 2012 guidelines to be presented at CCC Oct. 29, 2012 and published thereafter.



When treatment decisions are uncertain, additional investigations may serve to clarify risk status:

- Lp(a), hsCRP, urinary albumin/creatinine ratio (UACR), and, if  $\uparrow$  plasma glucose, HbA1c
- Graded exercise stress testing
- Non-invasive assessment of atherosclerosis: carotid imaging, ankle-brachial index, coronary artery calcium score (CAC)

**TREATMENT**

<p><b>MEDICATION</b>                  At start of treatment baseline ALT and CK:  <b>Medication</b></p> <ul style="list-style-type: none"> <li>• Statin monotherapy</li> </ul> <p><b>If unable to achieve 1° target:</b></p> <ul style="list-style-type: none"> <li>• Consider niacin or ezetimibe or bile acid sequestrant</li> </ul> <p><b>If triglycerides are &gt; 10 mmol/L:</b></p> <ul style="list-style-type: none"> <li>• Intensify lifestyle therapy</li> <li>• Consider combination statin with niacin or fibrate</li> <li>• Add omega-3 DHA/EPA or salmon oil 2 g BID</li> </ul>	<p><b>LIFESTYLE</b>  <b>Encourage all individuals to adopt a healthy lifestyle:</b>  <b>Smoke-free</b>  <b>Adopt healthy eating habits:</b></p> <ul style="list-style-type: none"> <li>• Limit intake of saturated and trans fatty acids, simple sugars, refined carbohydrates; and,</li> <li>• Emphasize a diet rich in vegetables, fruit, whole grain cereals, and polyunsaturated and monounsaturated oils, including omega-3 fatty acids.</li> </ul> <p><b>Achieve a healthy weight:</b></p> <ul style="list-style-type: none"> <li>• BMI &lt; 25 kg/m<sup>2</sup>; at minimum, &lt; 27 kg/m<sup>2</sup></li> <li>• Waist circumference &lt; 94 cm (37") for men &amp; &lt; 80 cm (31.5") for women</li> </ul> <p><b>Engage in regular physical activity:</b></p> <ul style="list-style-type: none"> <li>• 60 min of light, 30 – 60 min of moderate exercise 4 – 7 days/ week</li> </ul>
<p><b>Follow-up:</b> Repeat fasting lipids, ALT, and CK 1 - 4 months and adjust medication accordingly.</p> <p>Repeat in 6 - 12 months and only 12 months once targets are achieved. Repeat measures of ALT and CK are not necessary for the majority of patients on a stable therapeutic regimen.</p>	
<p><b>Specialty Clinic Referrals – Patient should be referred to specialty clinic if:</b></p> <ul style="list-style-type: none"> <li>• Multiple metabolic co-morbidities</li> <li>• Failure to achieve targets</li> <li>• Severe monogenic dyslipidemia</li> </ul>	



## SUPPLEMENTAL INFORMATION

Source: McPherson R, Frohlich J, Fodor G, Genest J. Canadian Cardiovascular Society position statement - Recommendations for the diagnosis and treatment of dyslipidemia and prevention of cardiovascular disease. Can J Cardiol. 2006; 22(11): 913 – 927. <sup>9</sup>

### WAIST CIRCUMFERENCE TARGETS FOR PATIENTS WITH DYSLIPIDEMIA

Waist circumference targets for management of dyslipidemia are more stringent than other recommendations because of the strong correlation between BMI, subcutaneous abdominal fat, and coronary atherosclerosis and are therefore considered of particular importance in the management of dyslipidemia.

### LIPID LOWERING MEDICATIONS:

Generic Name	Trade Name	Dose Range	Summary
<b>Statins</b>			<ul style="list-style-type: none"> <li>• Generally well tolerated</li> <li>• Significant increases in hepatic transaminase levels, defined as alanine aminotransferase (ALT) levels more than 3 times upper limit of normal occur in 0.3% - 2.0% of patients and are generally dose-related. Although underlying liver disease is considered a contraindication to statin therapy, there is no evidence of worsening of liver function in subjects with fatty liver, chronic hepatitis C, or primary biliary cirrhosis treated with statins – measure ALT at baseline, and between 1 and 3 months after initiating statin or niacin therapy</li> <li>• Statin-induced myopathy is a well-established but rare side-effect. The incidence of myalgia is approximately 3 – 4% in statin-treated patients vs. 2% in placebo-treated individuals.</li> <li>• Statin induced myositis (muscle discomfort + CK &gt;10 times normal limit) occurs in &lt; 0.1% of treated patients and requires prompt discontinuation of drug therapy; patients at most risk are elderly and/ or multiple co-morbidities.</li> <li>• In high risk patients, CK levels at baseline and advise to stop medication if significant symptoms develop.</li> <li>• Use lower dose ranges in persons of south and East Asian origin.</li> </ul>
Atorvastatin	Lipitor	10-80 mg	
Fluvastatin	Lescol	20-80 mg	
Lovastatin	Mevacor	20-80 mg	
Pravastatin	Pravachol	10-40 mg	
Rosuvastatin	Crestor	5-40 mg	
Simvastatin	Zocor	10-40 mg	
<b>Bile Acid and/ or Cholesterol Absorption Inhibitors</b>			
Cholestyramine	Questran	2 - 24 g	
Colestipol	Colestid	5 - 30 g	
Lodalis	Colesevelam	625 mg x 6 tabs/day	
Ezetimibe	Ezetrol	10 mg	
<b>Fibrates</b>			
Bezafibrate	Bezalip	400 mg	
Gemfibrozil	Lopid	600 - 1200 mg	
Fenofibrate	Lipidil Micro	100 - 200 mg 160 mg 145 mg	<ul style="list-style-type: none"> <li>• 15-20% increase in plasmal creatinine is common (higher when underlying renal disease).</li> <li>• Initiate at lowest available dose; increase only after re-evaluation of renal function.</li> <li>• Do not use gemfibrazil in combination with a statin.</li> </ul>
<b>Niacin</b>			<ul style="list-style-type: none"> <li>• The over-the-counter preparations of slow-release niacin are not recommended since they are commonly associated with elevated transaminase levels, particularly if administered in multiple doses over the course of the day. Crystalline niacin and extended release niacin preparations are much safer but may result in persistent significant elevations in ALT in approximately 1% of patients. A general recommendation is to measure ALT levels at baseline, and between 1 and 3 months after initiating niacin therapy.</li> <li>• Niacin can impair insulin sensitivity and may raise blood glucose levels in susceptible individuals in a dose dependent fashion, although this effect may be transient. Studies using niacin in combination with a statin have shown beneficial effects in reducing atherosclerosis progression in people with Diabetes. In patients with diabetes or glucose intolerance, initiate niacin therapy at 500 – 1000 mg per day and monitor glycemic control.</li> <li>• Niacin causes flushing which can be helped by pre-administration of aspirin, nocturnal dosing, and gradual titration up to recommended dose.</li> <li>• Niacin may also cause gastric upset.</li> </ul>
Nicotinic acid	Crystalline	1 - 3 g	
Ext. release	*Niaspan-FCT	0.5 - 2 g	



## COMMUNITY RESOURCES - CHOLESTEROL

### SPECIALITY CLINICS/PROGRAMS

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**Clinic/Program:** **University of Ottawa Heart Institute Lipid Clinic**

40 Ruskin Street, Ottawa, ON K1Y 4W7

Tel: 613-761-5257 Fax: 613-761-4676

Director: Dr. Ruth McPherson

**Description:** The focus of the Lipid Clinic is to diagnose and treat metabolic risk factors which contribute to cardiovascular disease. Of particular importance are cholesterol, triglycerides, Diabetes, obesity, and hypertension.

**Appropriate for:** Persons with documented elevated cholesterol/ lipids and/ or Diabetes; persons with strong family history plus risk factors

**Hours:** Mon & Fri: 8:00 a.m. - 12:00 p.m.

**Language:** English, French

**Cost:** N/A

**Referral:** Physician must call clinic to request appointment. Information required: patient history and demographics, most recent blood tests, family physician name and billing #. *Clinic will notify family physician's office of appointment date and time. Family physician's office must notify patient.* Tell patient to expect a letter and blood test requisitions in the mail from clinic a few weeks before scheduled appointment.

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**Clinic/Program:** **Foustanellas Endocrine and Diabetes Centre Lipid Clinic**

The Ottawa Hospital

Riverside Campus, 4th Floor, 1967 Riverside Drive, Ottawa, ON

Tel: 613-738-8400 ext. 88333 Fax: 613-738-8261

Director: Dr. TC Ooi

**Description:** This multidisciplinary lipid clinic provides individual nutrition counselling and medical management to people with lipid disorders.

**Appropriate for:** All patients with primary or secondary lipid disorders including those with diabetes related and renal dyslipidemias

**Hours:** Mon to Fri: 8:00 a.m. - 5:00 p.m.

Telephone is answered between 8:30 a.m. - 11:30 a.m. and 1:30 p.m. - 4:15 p.m.

**Language:** English, French

**Cost:** N/A

**Referral:** Physician referral required. Fax referral to clinic, include reason for referral, recent lab work and medication list. For Physicians: on referral, please include fasting glucose, lipid profile, TSH, creatinine and medication previously tried.

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**Clinic/Program: Ottawa Cardiovascular Centre**

502-1355 Bank Street, Ottawa, ON K1H 8K7  
Tel: 613-738-1584 Fax: 613-738-9097  
E-mail: admin@ottawacvcentre.com

**Ottawa Cardiovascular Centre (East)**

204-595 Montreal Rd., Ottawa, ON K1K 4L2  
Tel: 613-749-5421 Fax: 613-749-6621  
E-mail: admin@ottawacvcentre.com  
Director: Dr. Joel Niznick  
Admin. Manager: May Moloughney

**Description:** Prompt access to comprehensive cardiovascular consultation, diagnosis, and follow up care.

**Appropriate for:** Patients who require assessment and management of hypertension and hyperlipidemia

**Hours:** Mon to Fri: 8:30 a.m. - 4:30 p.m. with telephones answered from 9:00 a.m. - 12:00 p.m. and 1:00 p.m. - 4:00 p.m.

**Language:** English, French

**Cost:** N/A

**Referral:** Download and complete referral form: [www.ottawacvcentre.com/OCC\\_Requisition\\_Form.pdf](http://www.ottawacvcentre.com/OCC_Requisition_Form.pdf). Fill out the form and fax it to either location. Inform patient that the clinic will contact them with appointment.

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**Clinic/Program: Queensway-Carleton Endocrinology Clinic**

3045 Baseline Rd., Ottawa, ON K2H 8P4  
Tel: 613-721-2000 ext. 3763 Fax: 613-721-4787  
Contact: Sharron Rouatt

**Description:** Appointment with endocrinologist for lipid disorder. Program is not specifically a lipid clinic.

**Appropriate for:** Patients with lipid disorder

**Hours:** Varies

**Language:** English, French

**Cost:** N/A

**Referral:** Call clinic for appointment time and fax referral request; include purpose of referral and most recent relevant lab work. Clinic provides appointment time to family doctor's office. Family doctor must contact patient with appointment time and date.

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**Clinic/Program: Winchester District Memorial Hospital**

566 Louise St., Winchester, ON K0C 2K0  
Tel: 613-774-2422 ext. 6760

**Description:** The Clinical Nutrition Department/ Diabetic Education Program holds classes for individuals with elevated cholesterol and/ or at risk for heart disease.

**Appropriate for:** Individuals with elevated cholesterol or at risk for CVD

**Hours:** Mon to Fri: 8:00 a.m. - 4:00 p.m. (Evening classes 3 days/ month – call for class times). Satellite program for seniors (Senior Support Centre – call for information)

**Language:** English

**Cost:** N/A

**Referral:** Self referral, physician referral, or other health care provider referral

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## EDUCATION/ LIFESTYLE PROGRAMS:

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**Workshop:** **Coping with Cholesterol Series**

Lipid Clinic  
University of Ottawa Heart Institute  
40 Ruskin Street, Ottawa, ON  
Tel: 613-738-2384  
E-mail: [bmansfield@ottawaheart.ca](mailto:bmansfield@ottawaheart.ca)  
Website: [www.peakperformance.ca](http://www.peakperformance.ca)  
Contact: Beth Mansfield, Registered Dietitian

**Description:** Educational series delivered by Beth Mansfield.

**Eat Smart (\$30/p):** Get intelligent advice about sensible eating to lower LDL-cholesterol and triglycerides. Learn the principles of heart healthy eating to achieve your peak health.

**Shape Up (\$50/p):** Develop a weight loss plan of action for increasing HDL-cholesterol and lowering LDL-cholesterol and triglyceride levels. Get an individual body composition/ resting metabolic rate test and learn how to adjust your energy balance to achieve a healthy weight goal.

**Appropriate for:** Patients with elevated cholesterol levels.

**Hours:** Saturday mornings

**Language:** English

**Cost:** \$30 to \$50

**Referral:** Registration required by telephone

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**Workshop:** **Heart Delicious Nutrition Workshops**

Prevention and Wellness Centre (PWC)  
University of Ottawa Heart Institute  
40 Ruskin Street, Ottawa, ON. K1Y 4W7  
Tel: 613-761-4753 or 1-866-399-4432 Fax: 613-761-5309  
Website: [http://www.ottawaheart.ca/content\\_documents/2011\\_-\\_Jul-Aug\\_ENG.pdf](http://www.ottawaheart.ca/content_documents/2011_-_Jul-Aug_ENG.pdf)

**Description:** These are interactive workshops facilitated by a registered dietitian.

**ABCs to Heart Healthy Eating:** Develop the skills for heart healthy eating to reduce or control your blood cholesterol. Learn how to read food labels and get the facts on fat, cholesterol, fiber and salt.

**Heart Healthy Eating with Diabete::** Get the lowdown on meal planning, managing your diabetes and heart healthy eating. For people wishing to control or prevent diabetes.

**French Workshop – Healthy Eating from A to Z:** Offered only in French. Learn how to read food labels and get the facts on fat, cholesterol, fiber and salt.

**Nutrition Tips for Weight Management:** Learn to set realistic goals for healthy weight management. Acquire the skills to develop balanced meals, portion sizes and techniques for weight loss and maintenance.

**Appropriate for:** Patients and members of the public who are interested in learning about heart healthy eating

**Hours:** Refer to schedule online or contact PWC for details.

**Language:** English, French

**Cost:** Free, unless specified

**Referral:** Registration required by telephone

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**Workshop:** **Cholesterol Class**  
Renfrew Victoria Hospital Dietary Department  
499 Raglan St. North, Renfrew, On K7V 1P6  
Telephone:1-613-432-4851 ext. 230

**Appropriate for:** Individuals with high cholesterol levels.

**Hours:** Classes are held once per month at 2:00 p.m.

**Language:** English

**Cost:** N/A

**Referral:** No clinician referral required

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**Workshop:** **Nutrition Class**  
Pembroke Regional Hospital  
705 Mackay St., Pembroke, ON, K8A 1G8  
Telephone:1-613-732-2811 ext. 6151

**Description:** The topics covered include: The definition of lipids; target lab values; Canada's Food Guide; good fats & bad fats; sodium, fibre, portion sizes, eating out, alcohol, label reading shopping, activity, and healthy body weight.

**Appropriate for:** Individuals with high cholesterol levels.

**Hours:** Classes are held once per month at 1:00 p.m. and 6:00 p.m.

**Language:** English

**Cost:** N/A

**Referral:** No clinician referral required.

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**Workshop:** **Eating For A Healthy Heart**  
Deep River and District Hospital, Erica (dietitian)  
117 Banting Drive, RR#1, Deep River, ON, K0J 1P0  
Telephone: 1-613-584-3333 ext. 313  
Email: ericav@drdh.org

**Appropriate for:** Individuals with high cholesterol levels.

**Hours:** 1:00 p.m. to 2:30 p.m

**Language:** English

**Cost:** N/A

**Referral:** No clinician referral required.

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