CLP 017
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Guidelines for Lipid Testing

1. Background

The following guidelines are intended to provide community physicians with information on lipid testing as it relates to screening, diagnosis and treatment of dyslipidemia.

In July, 1997 the Working Group on Hypercholesterolemia and Other Dyslipidemias prepared a report for Health Canada. The interim report of the Working Group has been published as a supplement to the April, 1998 issue of the Canadian Journal of Cardiology. When determining the probability of developing coronary artery disease, the guidelines prepared by the Working Group advocate a shift from considering total cholesterol alone to the assessment of an individual's major risk factors. These principles may also apply to atherosclerotic vascular diseases.

For the sake of consistency and clarity, this OAML document reflects, where possible, the guidelines of the Working Group on Hypercholesterolemia & Other Dyslipidemias.

Guidelines are, by their nature, general in focus and cannot apply in every clinical situation. They do not serve as a substitute for sound clinical judgement.

2. Limitations

To test for dyslipidemia, total cholesterol (TC), high density lipoprotein cholesterol (HDL-C) and triglycerides (TG) should be measured and low density lipoprotein cholesterol (LDL-C) and the TC/HDL-C ratio should be calculated. Blood samples for these tests should be obtained after the patient has been fasting for 12-14 hours.

Testing within 6 weeks of an acute, stressful event may provide inaccurate results.

Note: If the TG level is greater than or equal to 4.5 mmol/L, the LDL-C calculation is inaccurate. In addition, the HDL-C level and TC/HDL-C ratio may be unreliable as risk markers.

3. Indications:

Screening for dyslipidemia with fasting lipid profile (TC, HDL-C, TG and LDL-C) is indicated in the following groups[1]:

I. Patients with atherosclerotic vascular disease:

- Every 1-3 years, as clinically indicated, up to age 75.

II. Patients with xanthomata or a family history of atherosclerotic vascular disease:

- One time measurement during youth.

- If previous test results are normal, repeat at age 30 and resume testing every 5 years from age 40 for men and age 50 for women.

III. Patients with diabetes:

- Every 1-3 years, as clinically indicated.

IV. Men ages 40-70, women ages 50-70; even with no other risk factors:

- Every 5 years.

The interpretation of lipid test results should be made in light of other risk factors as follows:

a. Age: Men greater than or equal to 45 years; women greater than or equal to 55 years or postmenopausal.

b. Family history of premature atherosclerotic vascular disease in first degree relative (men less than or equal to 55, women less than or equal to 65).

c. Current smoking.

d. Hypertension: BP greater than or equal to 140 mmHg systolic or greater than or equal to 90 mmHg diastolic (at least twice) or on antihypertensive medication. Do not include patients on non-pharmacologic therapy whose BP is normal.

e. Diabetes: The following criteria met twice: Fasting venous plasma glucose greater than or equal to 7.0 mmol/L or random venous plasma glucose greater than or equal to 11.1 mmol/L or 2 hour post 75g glucose load greater than or equal to 11.1 mmol/L.

f. Left ventricular hypertrophy.

While obesity and sedentary lifestyle are important factors as well, incorporating them in the equation will overestimate risk level. Instead, practitioners should include them in clinical judgements when assessing a patient.

4. Recommendations

Refer to the following table to determine the patient's risk category associated with the risk factors outlined above.

Number of Risk Factors	10 Year CHD Risk	Risk Category
greater than or equal to 4	greater than or equal to 40%	Very high
3	20-39%	High
2	10-19%	Moderate
0-1	less than 10%	Low

The above table is not valid outside the age groups indicated for screening (40-70 for men, 50-70 for women). **All patients with known atherosclerotic vascular disease are considered at very high risk; those with diabetes are considered at high risk even in the absence of detectable atherosclerotic**

vascular disease. It is recommended that treatment be initiated when one of the following values is exceeded, according to the patient's risk category.

Risk Category	Threshold Values[2]		
	LDL-C (mmol/L)	TC/HDL-C ratio	TG (mmol/L)
Very High	2.5	4	2
High	3.5	5	2
Moderate	4	6	2
Low	5	7	3

The frequency of test ordering to monitor treatment of dyslipidemia for the following groups is as indicated:

1. Patients on diet therapy only[3]
    - Initiation:
      Every 3-6 months up to 1 year.
    - Maintenance:
      Every 6-12 months.
2. Patients on diet and drug therapy[4]
    - Initiation of drug therapy
      Every 6-8 weeks up to 6 months depending on severity.
    - Maintenance
      Every 3 months in the first year.
      Every 6-12 months thereafter[5].

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[1]Clinical judgement should be used for patients with one or more risk factors who are outside the target ages. Interval periods for re-screening apply only when results are normal.

[2]While these threshold values indicate when treatment should be initiated, they are not necessarily target values.

[3]Testing to include taking lipid profile

[4]Testing should include:

- Lipid profile.
- ALT and CK to monitor potential side effects of medication.

[5]Testing should be more frequent in individuals who are at a high risk of having side effects.

5. References

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The Ontario Association of Medical Laboratories

The Ontario Association of Medical Laboratories (OAML) represents the community-based laboratory sector in Ontario.

Its mission is to promote excellence in the provision of laboratory services and, as an essential component of the health care system, to contribute to shaping the future of health care in Ontario.

The OAML encourages the highest level of professional and ethical integrity and technical excellence among laboratory owners, operators and staff in the provision of laboratory services for the benefit of the people of Ontario.

Guidelines for Clinical Laboratory Practice

The OAML, through its Quality Assurance and Clinical Laboratory Practice Committee, co-ordinates the development and dissemination, implementation and evaluation of Guidelines for Clinical Laboratory Practice.

A proposed Guideline is developed by a working group of the Committee with the participation of outside experts. The proposed guideline is then submitted to the Committee as a whole and to a Professional Advisory Group who provide an overall review of the document. The comments of the Committee and the Professional Advisory Group are incorporated into a revision of the guideline and this draft is submitted to laboratory Medical Directors, professional associations and other representatives of end users for additional comment. The document is revised in light of these comments and submitted to the OAML Board of Directors for approval.

Approved guidelines are distributed to Community-based Laboratories and by them to their client physicians.

There may be additional educational materials produced, if it is thought that they might be useful, and these are distributed with the guideline.

The comments of end users are essential to the development of guidelines and will encourage adherence. You are strongly encouraged to submit your comments on this or on any other OAML Guideline to:

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